NRCS
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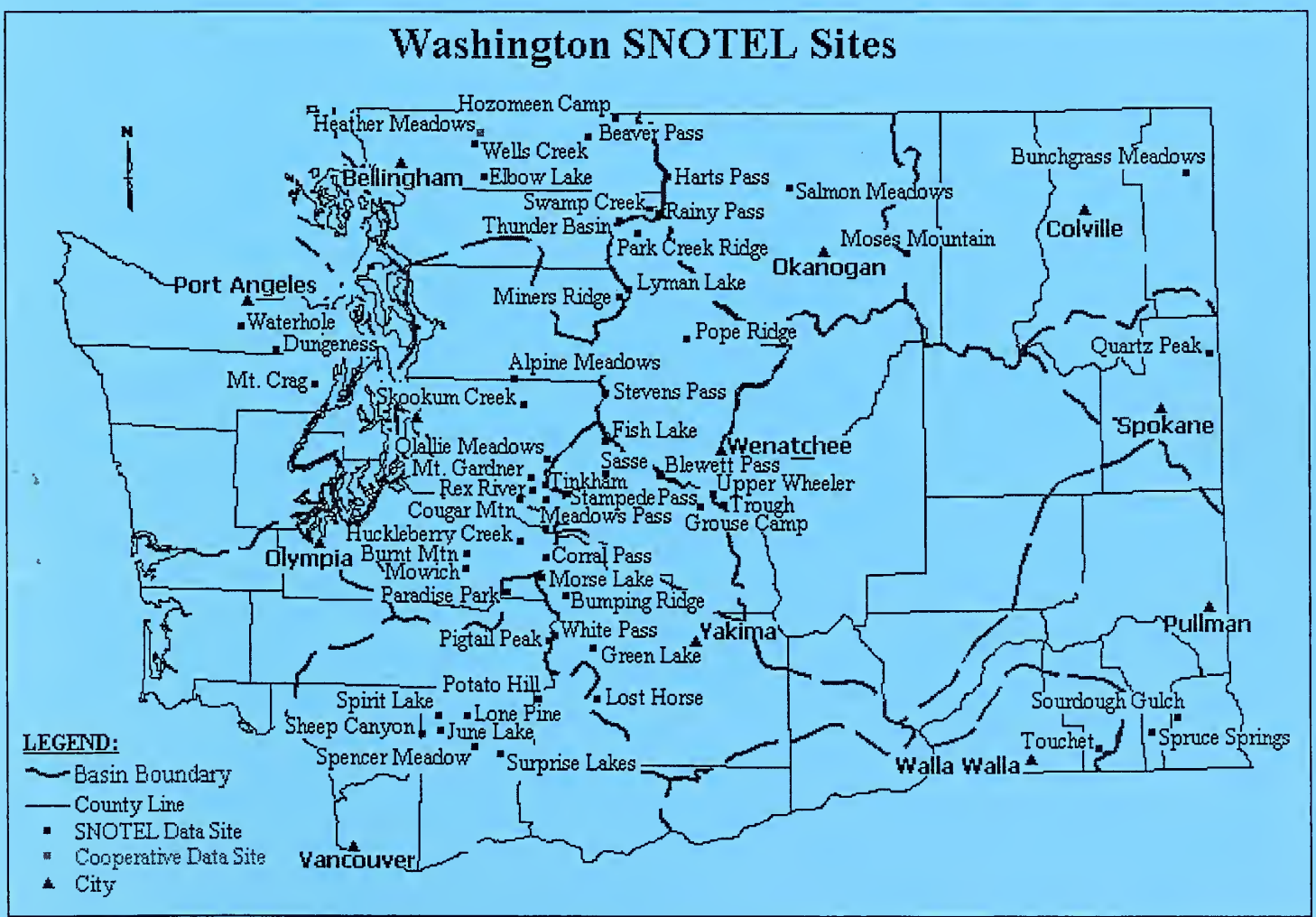
United States Department of Agriculture

Washington
Water Supply Outlook Report
March 1, 2002



Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Washington
Water Supply Outlook

March 2002

General Outlook

February proved to follow the typical Pacific Northwest pattern of unpredictability. Washington experienced variations from unseasonably dry to heavy precipitation and localized flooding. Even with a dry month, water-year precipitation totals remain near to above average across the state. Some long-range forecasts indicate a continuation of near to slightly above average precipitation and air temperature for the next 30-days. March came in like a lamb but soon grew teeth and brought undesired snow to the lowlands of the Puget Sound but also much needed increases in the mountains. Will the old proverb hold true and send us out like a lion?

Snowpack

The March 1 statewide SNOTEL readings were above average at 117%. The Sanpoil River Basin snow surveys reported the lowest readings at 73% of average. Readings in the Quilcene River Basin reported the highest at 238% of average. Westside averages from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 110% of average, the Central Puget river basins with 167% and the Lewis-Cowlitz basins with 139% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 106% and the Wenatchee area with 92%. Snowpack in the Spokane River Basin was at 124% and the Walla Walla River Basin had 120% of average. Maximum snow water content in Washington was at Surprise Lakes SNOTEL in the South Cascade Mountains, with water content of 78.1 inches. This site would normally have 40.1 inches of water content on March 1. The highest average in the state was Mount Crag SNOTEL in the Quilcene River Basin with 238% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	186	124
Newman Lake	214	119
Pend Oreille	145	89
Okanogan	185	106
Methow	220	100
Similkameen	124	88
Wenatchee	169	97
Chelan	236	116
Upper Yakima	182	107
Lower Yakima	188	105
Ahtanum Creek	172	92
Walla Walla	187	120
Lower Snake	180	107
Cowlitz	226	112
Lewis	249	166
White	201	106
Green	207	118
Puyallup	205	106
Cedar	206	148
Snoqualmie	251	154
Skykomish	261	154
Skagit	236	115
Baker	219	98
Nooksack	208	118
Olympic Peninsula	269	150

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported mostly below average precipitation totals throughout Washington river basins. The highest percent of average in the state was at Diablo Dam which reported 148% of average for a total of 12.5 inches. The average for this site is 8.45 inches for February. The least amount of precipitation was reported at Walla Walla with only 18% of average. Basin averages for the water year remain near to above average with the Olympics reporting the highest at 124% and the White-Green-Puyallup river basins with the lowest at 101% of average.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	85	119
Colville-Pend Oreille	75	120
Okanogan-Methow	86	106
Wenatchee-Chelan	80	105
Upper Yakima	59	105
Lower Yakima	64	106
Walla Walla	68	102
Lower Snake	67	109
Cowlitz-Lewis	66	109
White-Green-Puyallup	71	101
Central Puget Sound	79	109
North Puget Sound	108	117
Olympic Peninsula	83	124

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation and flood control. Reservoir storage in the Yakima Basin was 365,000-acre feet, 73% of average for the Upper Reaches and 116,000-acre feet, 84% of average for Rimrock and Bumping Lakes. The power generation reservoirs included the following: Coeur d'Alene Lake, 134,000 acre feet, 92% of average and 56% of capacity; Chelan Lake, 265,000 acre feet, 106% of average and 39% of capacity and the Skagit River reservoirs at 103% of average and 62% of capacity.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	56	92
Colville-Pend Oreille	57	81
Okanogan-Methow	29	39
Wenatchee-Chelan	39	106
Upper Yakima	44	73
Lower Yakima	50	84
North Puget Sound	62	103

For more information contact your local Natural Resources Conservation Service office.

Streamflow

March forecasts vary from 141% of average for the Cedar River at Cedar Falls to 90% of average at Chamokane Creek near Long Lake. April-September forecasts for some Western Washington streams include the Rex River near Cedar Falls, 114%; Green River, 106% and Skagit River, 106%. Some Eastern Washington streams include the Yakima River near Parker, 106%: Wenatchee River at Plain, 93% and Spokane River near Post Falls, 121%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data which is collected and coordinated by organizations cooperating with NRCS.

Eastern Washington February streamflows were, for the most part, below average due to cooler temperatures and below average precipitation. Western Washington reported near to above average flows last month with some localized mid-month flooding. The Priest River near the town of Priest River had the highest reported flows with 135% of average. The Grand Ronde at Troy, OR with 43% of average, was the lowest in the state. Other streamflow percent of averages: the Cowlitz, 77%; the Spokane at Spokane, 72%; the Columbia below Rock Island Dam, 88%; and the Cle Elum near Roslyn, 72%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	119-121
Colville-Pend Oreille	90-103
Okanogan-Methow	95-105
Wenatchee-Chelan	93-101
Upper Yakima	102-108
Lower Yakima	98-113
Walla Walla	100-112
Lower Snake	91-110
Cowlitz-Lewis	93-113
White-Green-Puyallup	106-107
Central Puget Sound	111-141
North Puget Sound	104-106
Olympic Peninsula	105

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
Pend Oreille Below Box Canyon	83
Kettle at Laurier	106
Columbia at Birchbank	88
Spokane at Long Lake	74
Similkameen at Nighthawk	85
Okanogan at Tonasket	69
Methow at Pateros	89
Chelan at Chelan	101
Wenatchee at Pashastin	89
Yakima at Cle Elum	69
Yakima at Parker	64
Naches at Naches	66
Grande Ronde at Troy	43
Snake below Lower Granite Dam	52
SF Walla Walla near Milton Freewater	107
Columbia River at The Dalles	69
Lewis at Ariel	82
Cowlitz below Mayfield Dam	77
Skagit at Concrete	112

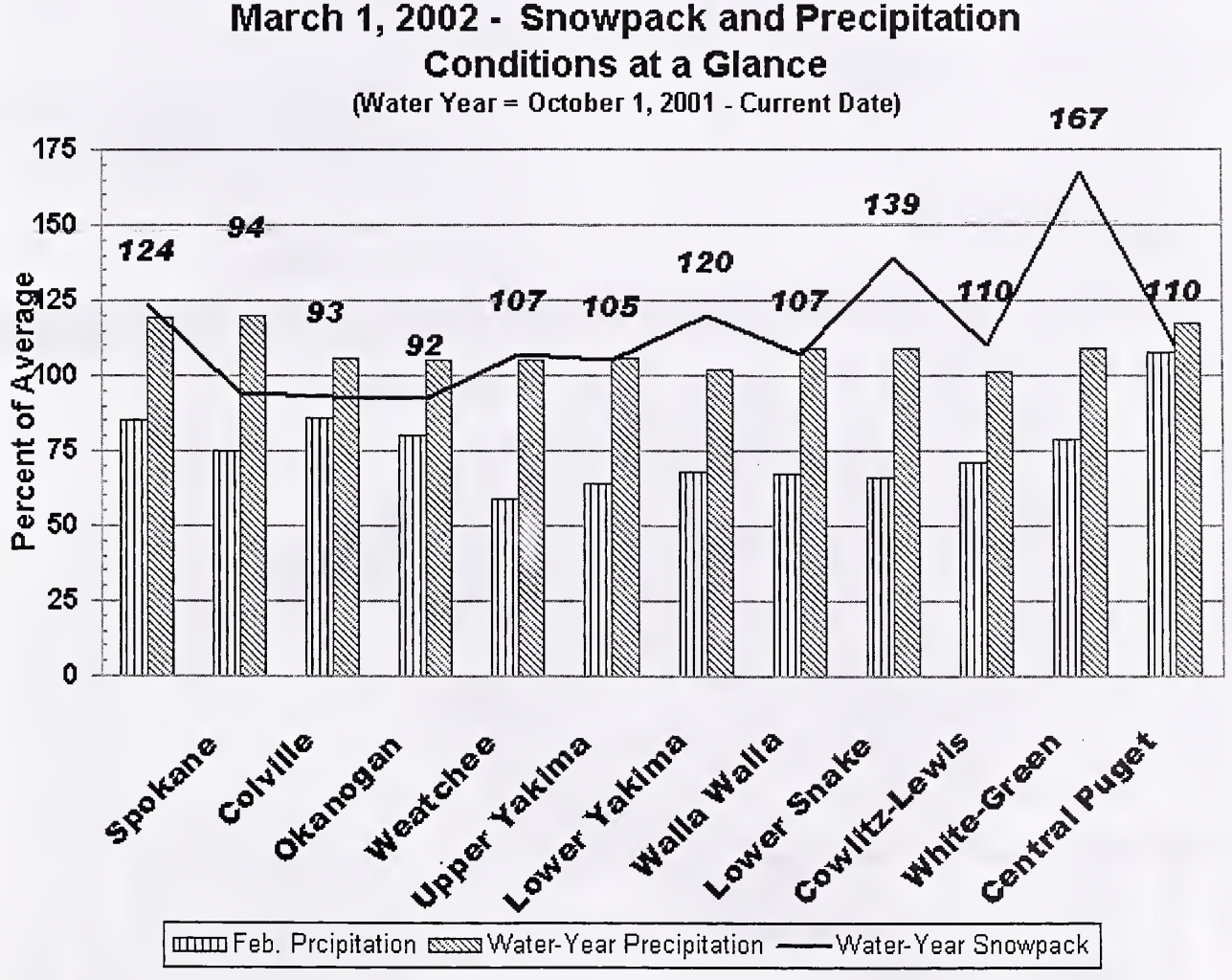
For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

MARCH 2002

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	2/26/02	20	4.8	4.0	5.7
AHTANUM R.S.	3100	2/27/02	16	4.0	3.5	7.0
ALPINE MEADOWS	3500	3/01/02	---	71.5E	20.0	33.8
ALPINE MEADOWS SNTL	350 0	3/01/02	---	77.2	24.7	36.5
AMBROSE	6480	2/26/02	30	7.6	6.3	10.5
ASHLEY DIVIDE	4820	2/26/02	18	4.6	5.3	6.2
BADGER PASS SNOTEL	6900	3/01/02	---	29.7	14.3	29.7
BAREE MIDWAY	4600	2/26/02	84	27.4E	17.1	28.7
BAREE TRAIL	3800	2/26/02	37	8.3E	9.0	8.2
BARKER LAKES SNOTEL	8250	3/01/02	---	7.3	8.3	11.1
BARNES CREEK CAN.	5320	3/01/02	55	16.9	10.5	17.3
BASIN CREEK SNOTEL	7180	3/01/02	---	4.1	5.3	6.1
BASSOO PEAK	5150	3/01/02	30	7.6	7.4	9.0
BEAVER CREEK TRAIL	2200	2/28/02	47	16.0	8.6	13.0
BEAVER PASS	3680	2/26/02	79	30.1	12.1	24.9
BERNE-MILL CREEK (d)	3170	2/28/02	70	25.3	17.1	25.3
BIG WHITE MTN CAN.	5510	3/02/02	56	17.9	9.2	16.8
BLACK MOUNTAIN	7750	3/01/02	---	6.8E	10.8	11.4
BLACK PINE SNOTEL	7100	3/01/02	---	6.1	6.3	10.1
BLEWETT PASS#2SNOTEL	4270	3/01/02	32	10.4	8.7	15.7
BLUE LAKE	5900	2/26/02	53	17.6	11.5	21.1
BRENDA MINE CAN.	4450	3/01/02	---	15.3	7.2	11.6
BRIEF	1600	2/28/02	15	4.4	---	6.9
BROOKMERE CAN.	3000	2/28/02	24	5.9	5.3	7.5
BROWN TOP AM	6000	2/27/02	184	67.8	23.4	53.4
BRUSH CREEK TIMBER	5000	2/28/02	25	6.2	5.6	7.5
BULL MOUNTAIN	6600	2/28/02	24	4.0	4.1	5.1
BUMPING LAKE (NEW)	3400	2/26/02	46	16.0	12.8	16.9
BUMPING RIDGE SNOTEL	4600	3/01/02	---	29.1	14.1	24.9
BUNCHGRASS MDWSNOTEL	5000	3/01/02	---	28.0	12.5	24.4
BUTTE CREEK	4070	2/27/02	39	11.7	---	8.2
CARMI CAN.	4100	3/01/02	18	4.0	3.5	5.8
CAYUSE PASS	5300	3/01/02	---	70.0E	38.0	64.8
CHESSMAN RESERVOIR	6200	2/25/02	7	1.0	2.9	3.1
CHICKEN CREEK	4060	2/26/02	41	14.2	10.0	14.4
CHIWAUKUM G.S.	2500	2/28/02	28	8.8	7.2	10.8
CLOUDY PASS AM	6500	3/01/02	---	45.0E	19.0	39.4
COMBINATION SNOTEL	5600	3/01/02	---	3.3	3.6	4.5
COPPER BOTTOM SNOTEL	5200	3/01/02	---	9.7	7.0	9.9
COPPER CREEK	5700	2/26/02	37	11.9	7.4	12.5
COPPER MOUNTAIN	7700	2/23/02	25	6.1	7.7	8.9
CORNER CREEK	3150	2/25/02	35	10.7	6.6	6.7
CORRAL PASS SNOTEL	6000	3/01/02	---	33.6	15.5	29.5
COTTONWOOD CREEK	6400	2/28/02	23	3.0	6.7	6.0
COUGAR MTN. SNOTEL	3200	3/01/02	---	20.8	10.2	17.1
COX VALLEY	4500	2/24/02	105	35.0	16.1	31.7
COYOTE HILL	4200	3/01/02	28	7.0	7.0	9.1
DALY CREEK SNOTEL	5780	3/01/02	---	6.6	6.2	9.4
DEER PARK	5200	2/24/02	47	17.8	8.4	15.1
DESERT MOUNTAIN	5600	2/27/02	35	10.2	7.6	12.6
DEVILS PARK	5900	2/28/02	140	49.6	21.2	37.9
DISCOVERY BASIN	7050	2/27/02	24	4.5	7.4	8.4
DIX HILL	6400	3/03/02	30	7.6	9.0	10.0
DOMMERIE FLATS	2200	2/26/02	17	7.0	7.4	7.2
EAST FORK R.S.	5400	3/01/02	17	3.3	3.8	5.6
EAST RAGGED SADDLE	3740	3/02/02	70	25.6	15.7	16.8
EASY PASS AM	5200	3/01/02	---	68.5E	26.2	65.1
EL DORADO MINE	7800	2/24/02	38	11.0	9.9	15.8
ELBOW LAKE SNOTEL	3200	3/01/02	92	40.4	19.0	34.3
EMERY CREEK SNOTEL	4350	3/01/02	---	10.5	8.1	13.3
ENDERBY CAN.	5800	2/28/02	111	39.0	17.3	28.6
ESPERON CK. UP CAN.	5050	2/24/02	50	16.2	7.2	10.0
FARRON CAN.	4000	2/25/02	32	10.6	6.3	11.3
FATTY CREEK	5500	3/03/02	58	16.6	13.3	20.4
FISH CREEK	8000	2/26/02	20	3.8	6.2	7.8
FISH LAKE	3370	2/28/02	80	32.5	18.7	29.9
FISH LAKE SNOTEL	3370	3/01/02	75	28.6	15.7	30.6
FLATTOP MTN SNOTEL	6300	3/01/02	---	41.9	18.8	39.2
FLEECER RIDGE	7500	2/28/02	32	7.4	5.6	9.2
FOURTH OF JULY SUM	3200	2/28/02	44	13.7	9.6	8.2
FRED BURR PASS	8000	2/27/02	55	15.5	---	---
FREEZEOUT CK. TRAIL	3500	2/27/02	37	10.8	5.4	11.3
FROHNER MDWS SNOTEL	6480	3/01/02	---	3.7	5.1	6.3
GOAT CREEK	3600	2/25/02	17	5.3	4.4	6.1
GRASS MOUNTAIN #2	2900	2/27/02	35	14.3	6.0	9.8
GRAVE CRK SNOTEL	4300	3/01/02	---	13.8	8.0	14.5
GREEN LAKE	6000	3/01/02	---	32.0E	18.1	29.2
GREEN LAKE SNOTEL	6000	3/01/02	62	22.2	10.9	19.7
GREYBACK RES CAN.	4700	2/27/02	28	6.9	4.8	7.8
GRIFFIN CR DIVIDE	5150	3/01/02	32	7.8	6.8	9.5
GROUSE CAMP SNOTEL	5380	3/01/02	---	19.6	9.9	17.6
HAMILTON HILL CAN.	4550	3/02/02	41	12.0	8.3	12.7
HAND CREEK SNOTEL	5030	3/01/02	---	7.6	7.1	9.9
HARTS PASS SNOTEL	6500	3/01/02	120	38.9	17.5	39.7
HELL ROARING DIVIDE	5770	2/27/02	70	24.8	13.1	25.8
HERRIG JUNCTION	4850	2/26/02	67	23.0	11.9	22.2
HIGH RIDGE SNOTEL	4980	3/01/02	---	23.7	14.4	21.2
HOODOO BASIN SNOTEL	6050	3/01/02	---	41.4	17.5	38.6
HUMBOLDT GLCH SNOTEL	4250	3/01/02	---	14.1	8.8	11.7
HURRICANE	4500	3/01/02	---	17.5E	5.1	15.6
INTERGAARD	6450	2/27/02	15	2.0	4.6	6.2
ISINTOK LAKE CAN.	5100	2/28/02	24	5.1	5.2	6.5
JUNE LAKE SNOTEL	3200	3/01/02	---	53.9	24.4	33.9
KELLER RIDGE	3700	2/27/02	18	4.2	4.8	---
KELLOGG PEAK	5560	2/28/02	78	26.2	15.6	25.8
KISHENEHN	3890	2/26/02	32	8.0	4.8	7.3
KIT CARSON PASTURE	4950	2/28/02	25	6.1	5.5	8.2
KLESILKWA CAN.	3450	2/25/02	50	16.3	4.6	10.5
KRAFT CREEK SNOTEL	4750	3/01/02	---	12.0	10.2	13.6
LESTER CREEK	3100	2/27/02	60	21.4	11.6	17.2
LIGHTNING LAKE CAN.	3700	3/01/02	35	9.8	5.9	10.3
LOGAN CREEK	4300	2/28/02	22	4.6	5.2	6.2
LOLO PASS SNOTEL	5240	3/01/02	79	24.0	12.8	26.8
LONE PINE SNOTEL	3800	3/01/02	---	48.7	21.2	31.7
LOOKOUT SNOTEL	5140	3/01/02	---	33.4	16.8	27.2
LOST HORSE MTN CAN.	6300	2/26/02	31	6.3	6.9	8.0
LOST HORSE SNOTEL	5000	3/01/02	53	15.1	9.6	18.3
LOST LAKE SNOTEL	6110	3/01/02	---	56.2	22.5	50.7
LOWER SANDS CREEK #2	3120	2/25/02	65	22.9	12.9	16.6
LUBRECHT FOREST NO 3	5450	2/27/02	18	3.6	5.8	5.6
LUBRECHT FOREST NO 4	4650	2/27/02	10	1.8	3.5	2.7
LUBRECHT FOREST NO 6	4040	2/27/02	15	2.8	3.8	3.2
LUBRECHT HYDROPLOT	4200	3/01/02	20	4.0	5.1	5.1
LUBRECHT SNOTEL	4680	3/01/02	---	4.5	5.0	5.3
LYMAN LAKE SNOTEL	5900	3/01/02	---	61.7	26.2	55.1
LYNN LAKE	4000	2/27/02	78	28.7	13.8	16.1
MARIAS PASS	5250	2/28/02	47	15.1	9.6	14.9
MARTEN LAKE AM	3600	2/27/02	160	63.0E	30.6	61.9
MCCULLOCH CAN.	4200	2/28/02	27	4.8	4.2	6.2
MEADOWS CABIN	1900	2/28/02	22	5.9	2.9	5.5
MEADOWS PASS SNOTEL	3240	3/01/02	---	31.9	16.0	19.8
MERRITT	2140	2/28/02	37	12.2	9.7	14.2
MICA CREEK SNOTEL	4750	3/01/02	---	27.8	18.0	23.2
MINERAL CREEK	4000	3/01/02	46	14.0	10.1	15.8
MISSEZULA MTN CAN.	5080	3/02/02	34	8.0	5.4	8.4
MISSION RIDGE	5000	2/28/02	42	15.7	---	15.2
MONASHEE PASS CAN.	4500	3/01/02	39	10.7	6.7	11.9
MORRISSEY RIDGE CAN.	6100	3/01/02	---	27.0	9.1	48.5
MORSE LAKE SNOTEL	5400	3/01/02	---	45.9	23.5	46.7
MOSES MOUNTAIN (2)	4800	2/27/02	38	12.3	7.5	17.5
MOSES MTN SNOTEL	4800	3/01/02	---	16.6	6.3	13.4
MOSES PEAK	6650	2/27/02	61	17.2	5.8	11.7
MOSQUITO RDG SNOTEL	5200	3/01/02	---	34.0	15.5	31.1
MOULTON RESERVOIR	6850	2/25/02	19	3.6	6.4	6.2
MOUNT CRAG SNOTEL	4050	3/01/02	73	63.8	17.6	26.8
MT. KOBAU CAN.	5500	2/27/02	37	10.6	7.7	10.2
MOUNT TOLMAN	2000	2/26/02	8	2.4	2.4	3.3
MOUNT GARDNER SNOTEL	2860	3/01/02	---	20.7	10.9	14.1
MUTTON CREEK #1	5700	2/22/02	39	13.2	5.5	12.0
N.F. ELK CR SNOTEL	6250	3/01/02	---	8.0	7.7	10.2
NEW HOZOMEEN LAKE	2800	2/27/02	32	9.0	5.2	10.3
NEZ PERCE CMP SNOTEL	5650	3/01/02	---	9.7	7.8	12.7
NEZ PERCE PASS	6570	2/28/02	40	10.9	9.7	15.7
NOISY BASIN SNOTEL	6040	3/01/02	---	32.6	18.0	33.8
OLALLIE MDWS SNOTEL	3960	3/01/02	---	48.9	25.9	48.9
OLALLIE MEADOWS	3630	2/26/02	106	44.9	22.5	36.7
OPHIR PARK	7150	3/03/02	35	9.2	9.3	14.1
OYAMA LAKE CAN.	4100	2/27/02	24	5.8	4.4	6.2
PARADISE PARK SNOTEL	5500	3/01/02	---	66.6	32.7	59.7
PARK CK RIDGE SNOTEL	4600	3/01/02	119	51.4	22.9	44.1
PETERSON MDW SNOTEL	7200	3/01/02	---	4.0	6.6	7.8
PIGTAIL PEAK SNOTEL	5900	3/01/02	121	47.5	21.0	44.6
PIKE CREEK SNOTEL	5930	3/01/02	---	21.7	10.2	22.8
PIPESTONE PASS	7200	2/24/02	12	2.0	3.2	4.1
POPE RIDGE SNOTEL	3540	3/01/02	50	15.1	10.2	18.5
POSTILL LAKE CAN.	4200	2/26/02	26	7.2	5.8	7.3
POTATO HILL SNOTEL	4500	3/01/02	---	30.0	14.5	23.6
QUARTZ PEAK SNOTEL	4700	3/01/02	---	23.3	10.9	19.5
RAGGED MOUNTAIN	4200	3/02/02	68	27.1	15.5	17.5
RAINY PASS SNOTEL	4780	3/01/02	---	41.4	18.0	38.2
REX RIVER SNOTEL	1900	3/01/02	97	41.1	15.6	23.9
ROCKER PEAK SNOTEL	8000	3/01/02	---	7.5	9.6	11.2
ROCKY CREEK AM	2100	2/27/02	27	10.8	12.6	26.5
ROLAND SUMMIT	5120	3/01/02	---	40.0E	---	29.2
RUSTY CREEK	4000	2/22/02	17	4.4	3.1	6.2
SADDLE MTN SNOTEL	7900	3/01/02	---	18.4	12.3	21.8
SAGE CREEK SADDLE	4080	2/25/02	69	25.7	10.7	15.5
SALMON MDWS SNOTEL	4500	3/01/02	30	8.8	4.4	10.1
SASSE RIDGE SNOTEL	4200	3/01/02	---	34.9	15.4	30.3
SAVAGE PASS SNOTEL	6170	3/01/02	77	21.1	12.5	22.5
SAWMILL RIDGE	4700	2/27/02	72	26.5	13.2	28.6
SCHREIBERS MDW AM	3400	2/27/02	129	51.6	19.2	43.5
SHEEP CANYON SNOTEL	4050	3/01/02	---	39.5	7.0	31.6
SHERWIN SNOTEL	3200	3/01/02	---	15.5	9.2	10.8
SILVER STAR MTN CAN.	5600	2/24/02	84	28.7	13.7	25.0
SKALKAHO SNOTEL	7260	3/01/02	---	17.9	11.3	20.2

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SKITWISH RIDGE	5110	2/25/02	99	37.1	18.5	27.2
SKOOKUM CREEK SNOTEL	3920	3/01/02	---	41.4	16.3	18.9
SLIDE ROCK MOUNTAIN	7100	2/24/02	34	8.3	7.3	12.6
SOURDOUGH GULCH SNTL	400 0	3/01/02	0	.0	.0	---
SPENCER MDW SNOTEL	3400	3/01/02	---	42.4	18.6	28.6
SPIRIT LAKE SNOTEL	3100	3/01/02	---	10.7	2.8	---
SPOTTED BEAR MTN.	7000	2/26/02	32	9.2	9.7	12.7
SOURDOUGH GULCH SNTL	400 0	3/01/02	0	.0	.0	---
STAHL PEAK SNOTEL	6030	3/01/02	---	34.8	12.7	29.9
STAMPEDE PASS SNOTEL	3860	3/01/02	---	46.8	22.3	39.8
STEMILT SLIDE	5000	2/25/02	34	11.1	8.3	12.8
STEMPLE PASS	6600	2/27/02	26	6.3	5.0	8.3
STEVENS PASS SNOTEL	4070	3/01/02	---	36.0	19.1	38.3
STEVENS PASS SAND SD	3700	2/28/02	82	29.9	18.4	30.6
STORM LAKE	7780	2/27/02	29	5.6	8.4	10.2
STRYKER BASIN	6180	2/26/02	88	29.6	13.2	26.9
SUMMERLAND RES CAN.	4200	2/28/02	31	8.5	4.6	8.4
SUMMIT G.S.	4600	2/25/02	25	6.8	6.3	7.1
SUNSET SNOTEL	5540	3/01/02	---	18.3	13.3	26.0
SURPRISE LKS SNOTEL	4250	3/01/02	---	78.1	25.5	40.1
TEN MILE LOWER	6600	2/25/02	19	3.3	4.9	5.9
TEN MILE MIDDLE	6800	2/25/02	26	5.4	6.9	8.9
THUNDER BASIN	4200	3/01/02	---	20.0E	8.9	19.0
TINKHAM CREEK SNOTEL	3000	3/01/02	---	31.0	18.0	26.7
TOGO	3370	2/25/02	37	11.6	---	8.6
TOUCHET SNOTEL	5530	3/01/02	92	36.0	17.5	28.5
TRAPPING CK LOW CAN.	2850	3/01/02	---	4.7E	---	5.0
TRINKUS LAKE	6100	2/26/02	108	35.4	23.4	36.4
TROUGH #2 SNOTEL	5310	3/01/02	23	8.3	6.0	9.3
TROUT CREEK CAN.	5650	2/28/02	30	7.5	5.3	6.7
TRUMAN CREEK	4060	3/05/02	15	4.0	5.1	4.4
TUNNEL AVENUE	2450	2/27/02	54	22.0	15.9	18.6
TV MOUNTAIN	6800	3/03/02	53	13.5	9.6	15.2
TWELVEMILE SNOTEL	5600	3/01/02	---	14.7	9.6	16.0
TWIN CAMP	4100	2/27/02	51	18.0	8.0	21.5
TWIN CREEKS	3580	2/26/02	29	8.6	7.8	10.2
TWIN LAKES SNOTEL	6400	3/01/02	---	36.4	18.8	34.7
TWIN SPIRIT DIVIDE	3480	3/02/02	47	16.0	10.2	13.1
UPPER HOLLAND LAKE	6200	2/26/02	102	31.5	20.3	30.0
UPPER WHEELER SNOTEL	4400	3/01/02	---	8.8	8.5	11.7
VASEUX CREEK CAN.	4250	2/27/02	7	1.4	2.4	5.5
WARM SPRINGS SNOTEL	7800	3/01/02	---	13.8	12.3	17.0
WEASEL DIVIDE	5450	3/01/02	90	31.6	11.4	28.7
WELLS CREEK SNOTEL	4200	3/01/02	80	31.4	15.5	---
WHITE PASS ES SNOTEL	4500	3/01/02	---	21.4	10.5	21.8
WHITE ROCKS MTN CAN.	7200	3/01/02	67	24.0	10.4	19.3



USDA NRCS
Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow/snow.htm

Oregon:
http://www.or.nrcs.usda.gov/snow/snow.htm

Idaho:
http://idsnow.id.nrcs.usda.gov

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov

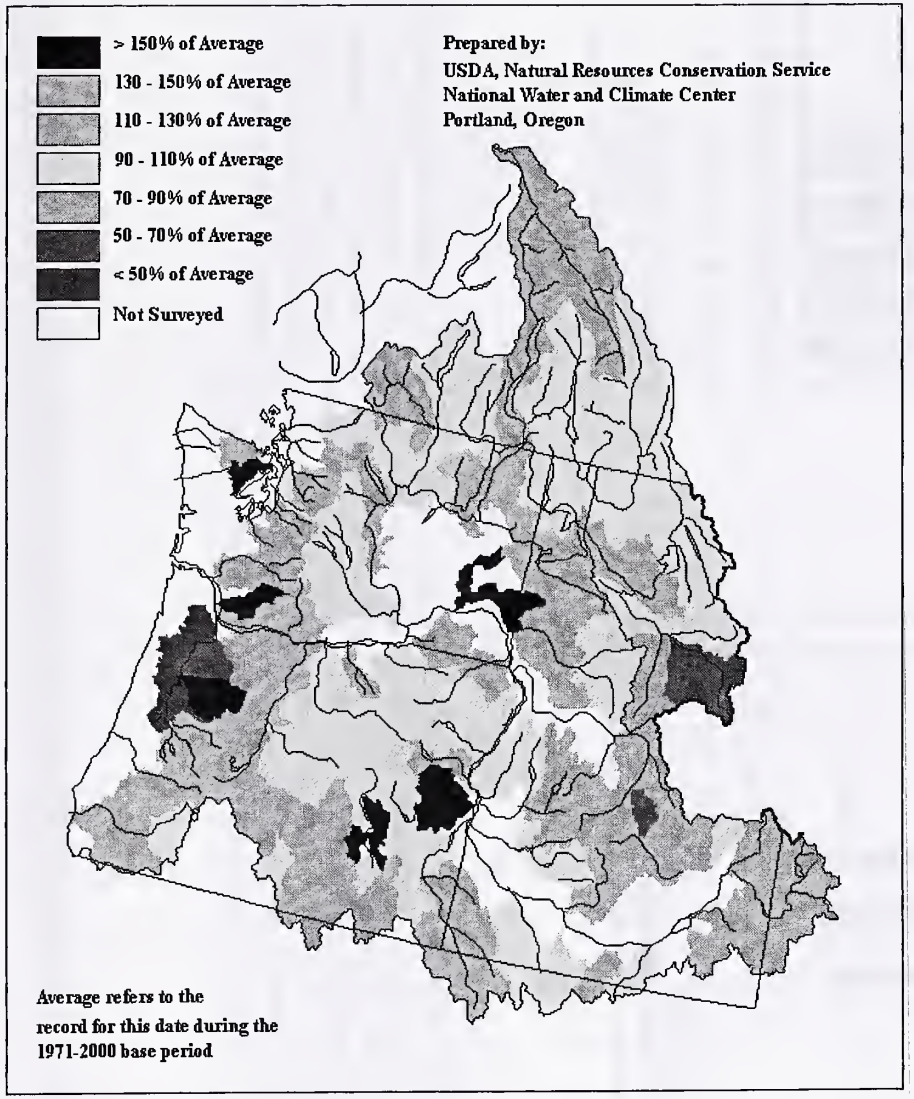
USDA-NRCS Agency Homepages

Washington:
http://www.wa.nrcs.usda.gov/nrcs

NRCS National:
http://www.ftw.nrcs.usda.gov

Mountain Snow Water Equivalent

as of March 1, 2002 (in relation to the average for this date)

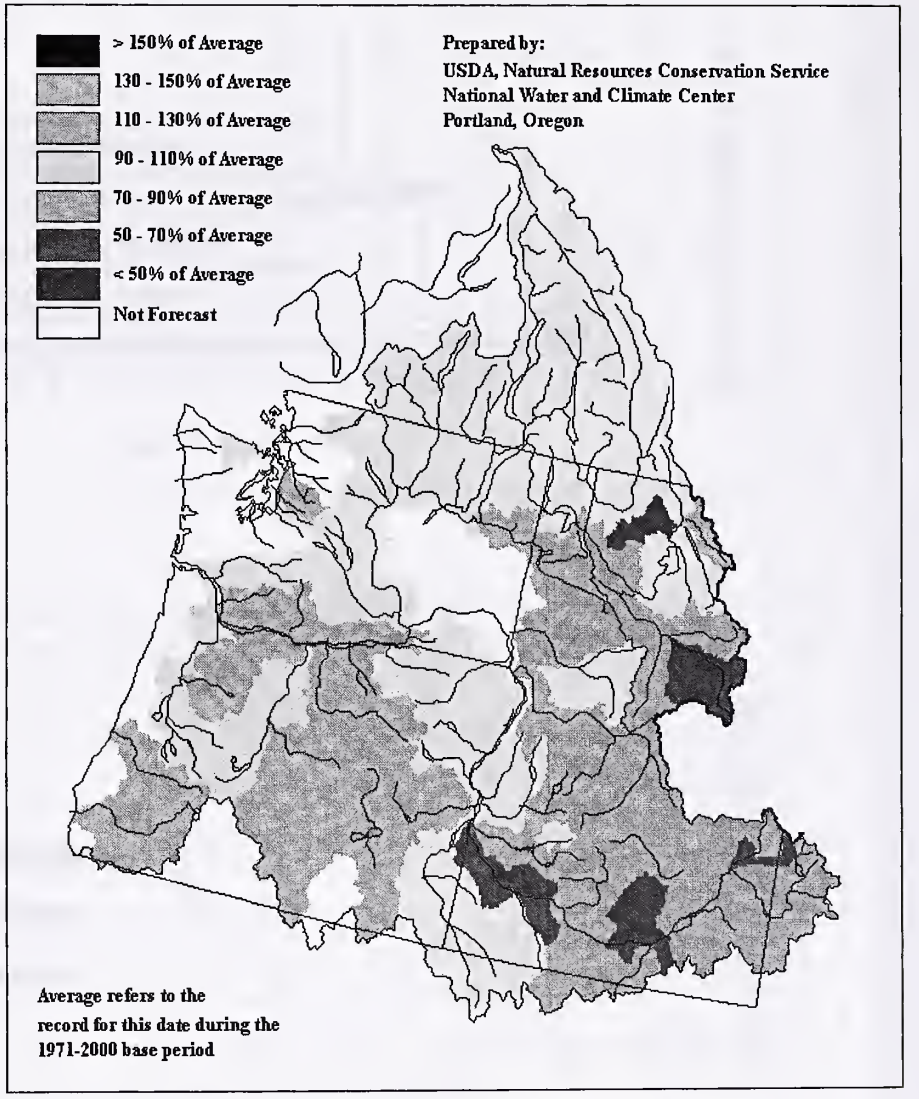


United States Department of Agriculture -- Natural Resources Conservation Service
in cooperation with
The Province of British Columbia -- Ministry of the Environment

http://www.wcc.nrcs.usda.gov/water/snow/colusnow.pl?state=columbia_river

Spring and Summer Streamflow Forecasts

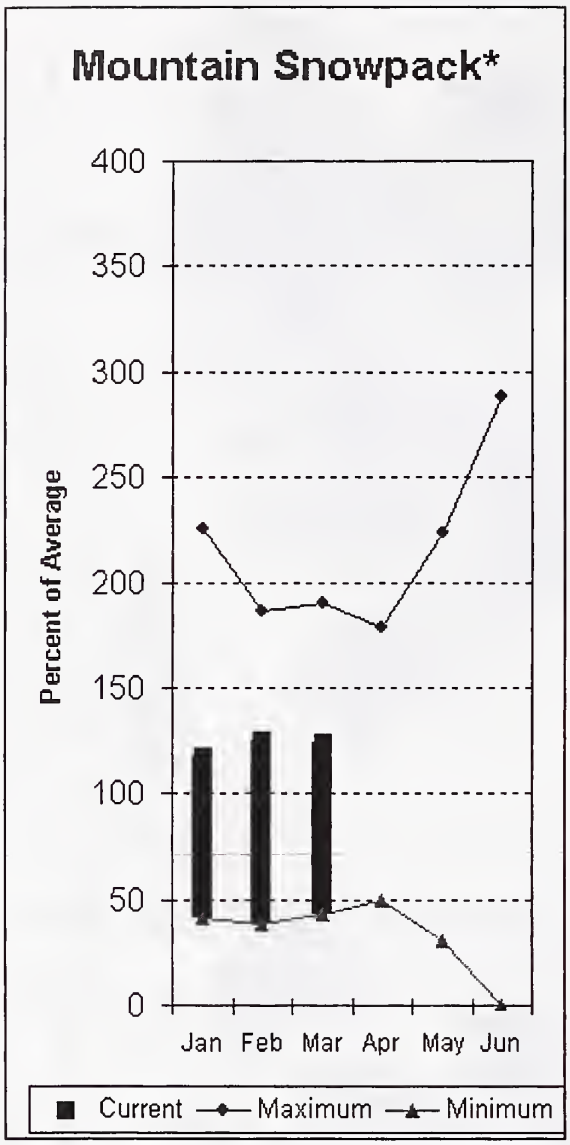
as of March 1, 2002 (in relation to the average for this date)

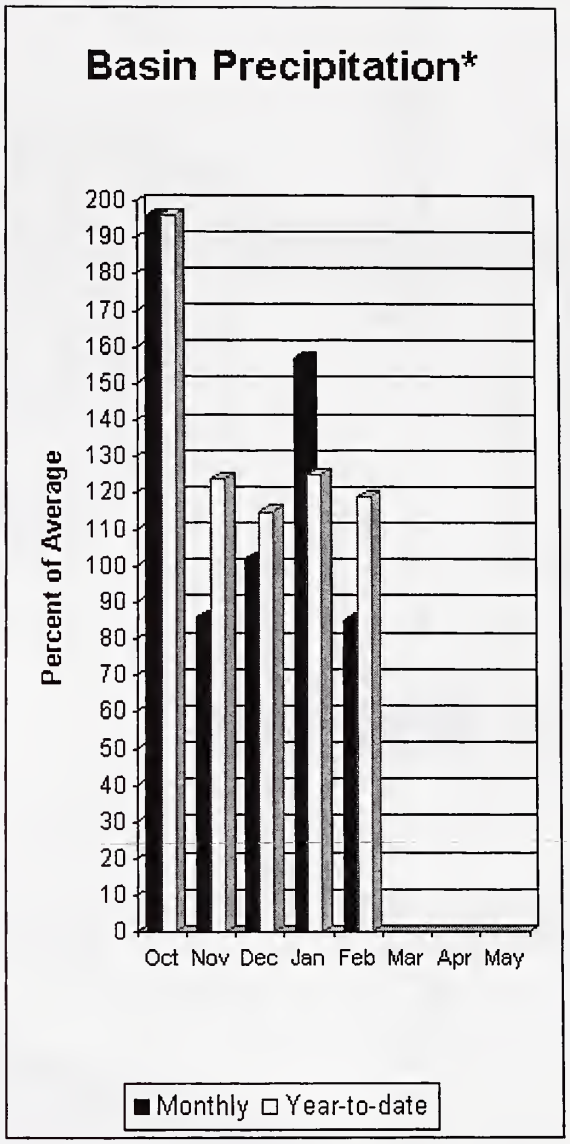


United States Department of Agriculture -- Natural Resources Conservation Service
in cooperation with
United States Department of Commerce, NOAA -- National Weather Service

http://www.wcc.nrcs.usda.gov/water/strmflow/colu_strmflow.pl?state=columbia_river

Spokane River Basin





*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 121% of average near Post Falls and 119% at Long Lake. The forecast is based on a basin snowpack that is 124% of average and precipitation that is 119% of average for the water year. Precipitation for February was below normal at 85% of average. Streamflow on the Spokane River at Long Lake, was 74% of average for February. March 1 storage in Coeur d'Alene Lake, was 134,000-acre feet, 92% of average and 56% of capacity. Snowpack at Quartz Peak SNOTEL site was 119% of average with 23.3 inches of water content. Average temperatures in the Spokane basin were 1 degree below normal for February and 1 degree above for the water year.

For more information contact your local Natural Resources Conservation Service office.

SPOKANE RIVER BASIN
Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Chance Of Exceeding * ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	2620	2965	3200	121	3435	3780	2650
	APR-JUL	2519	2853	3080	121	3307	3641	2552
SPOKANE at Long Lake (2)	APR-JUL	2751	3138	3401	119	3664	4051	2851
	APR-SEP	2957	3366	3644	119	3922	4331	3072

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	133.7	26.3	144.9

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	18	186	124
NEWMAN LAKE	1	214	119

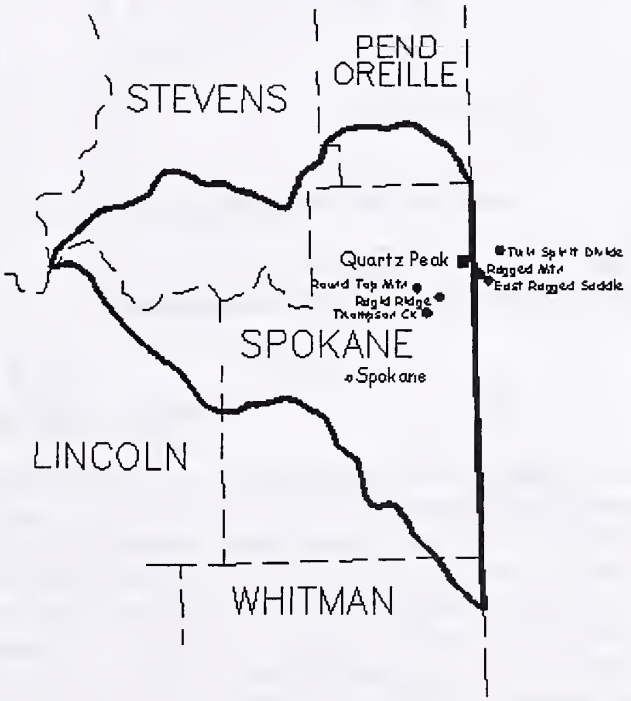
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

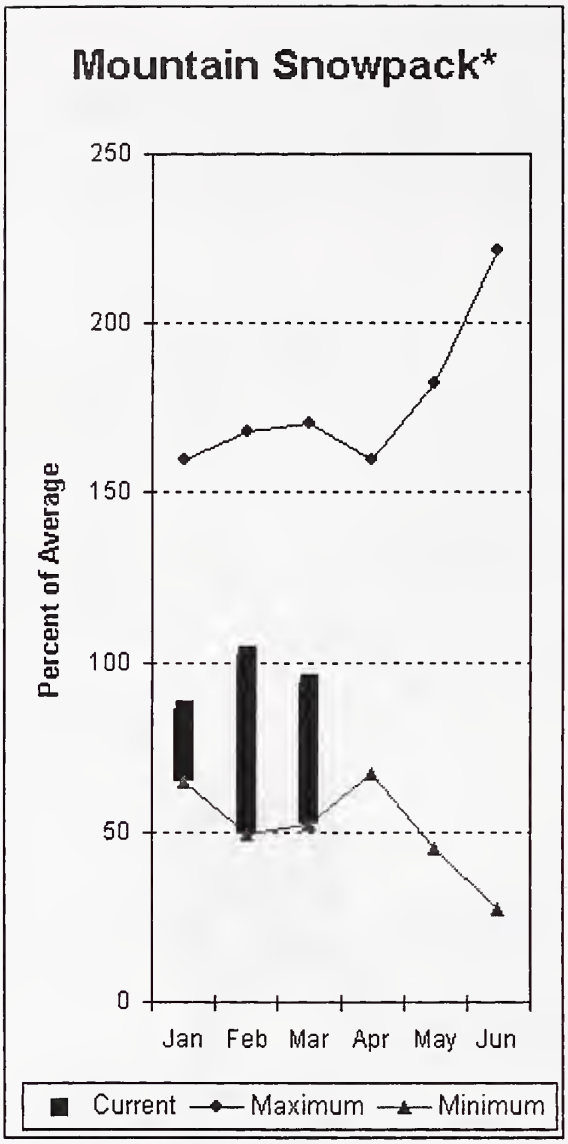
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

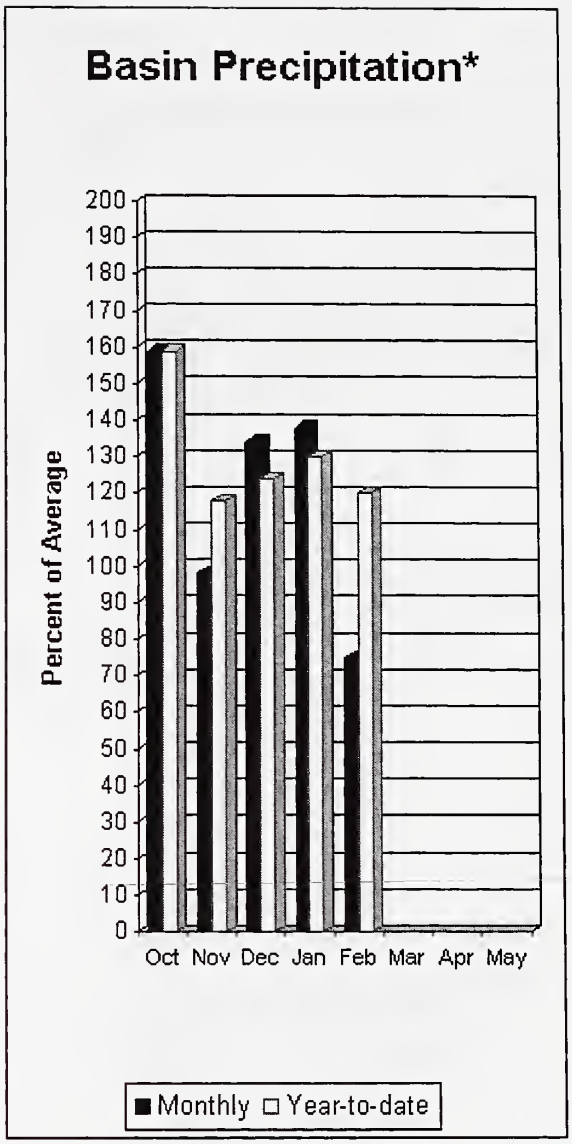
Spokane River Basin
Percent of Average
March 1, 2002

Snowpack - 124%
Precipitation - 119%
Reservoir Capacity - 92%



Colville - Pend Oreille River Basins





*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 103%, Colville at Kettle Falls is 98% and Priest River near the town of Priest River is 102%. February streamflow was 83% of average on the Pend Oreille River, 88% on the Columbia at the International Boundary and 106% on the Kettle River. March 1 snow cover was 89% of average in the Pend Oreille Basin and 99% in the Kettle River Basin. Bunchgrass Meadows SNOTEL site had 28 inches of snow water on the snow pillow. Normally Bunchgrass would have 24.4 inches on March 1. Precipitation during February was 75% of average, bringing the year-to-date precipitation to 120% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 81% of average and 57% of capacity on March 1. Average temperatures were 1 degree below normal for February and 1 degree above for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (2)	APR-JUL	9214	10628	11588	91	12548	13962	12700
	APR-SEP	9313	11270	12607	91	13944	15985	13900
PRIEST near Priest River (1,2)	APR-JUL	691	787	830	102	873	969	814
	APR-SEP	651	837	885	102	933	1111	868
PEND OREILLE bl Box Canyon (2)	APR-JUL	9700	10948	11797	91	12646	13894	12900
	APR-SEP	9729	11516	12814	91	14113	16024	14100
CHAMOKANE CREEK near Long Lake	MAY-AUG	5.3	7.6	9.2	90	10.8	13.1	10.2
COLVILLE at Kettle Falls	APR-SEP	100	123	138	98	153	176	141
	APR-JUL	90	111	125	98	139	160	128
KETTLE near Laurier	APR-SEP	1719	1904	2030	103	2156	2341	1972
	APR-JUL	1650	1817	1930	103	2043	2210	1874
COLUMBIA at Birchbank (1,2)	APR-JUL	27270	30729	32300	93	33871	37330	34900
	APR-SEP	33850	38217	40200	92	42183	46550	43500
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	50725	57860	61100	96	64340	71475	63990
	APR-JUL	42800	48714	51400	96	54086	60000	53850

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT	5232.0	2744.0	951.5	3523.9
BANKS	715.0	659.3	696.5	690.2

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
COLVILLE RIVER	1	0	135
PEND OREILLE RIVER	90	145	89
KETTLE RIVER	9	154	99

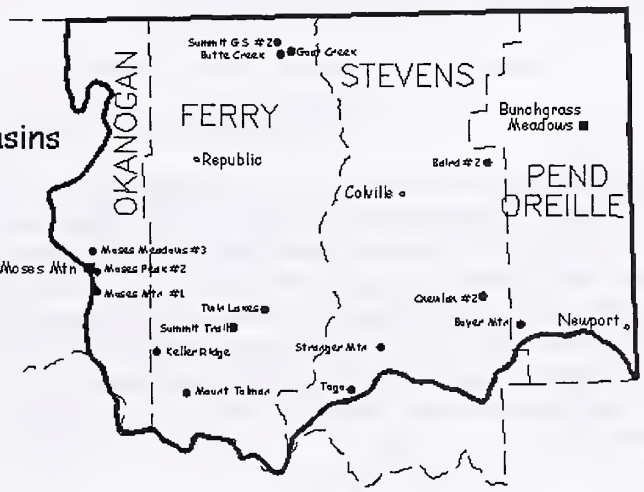
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

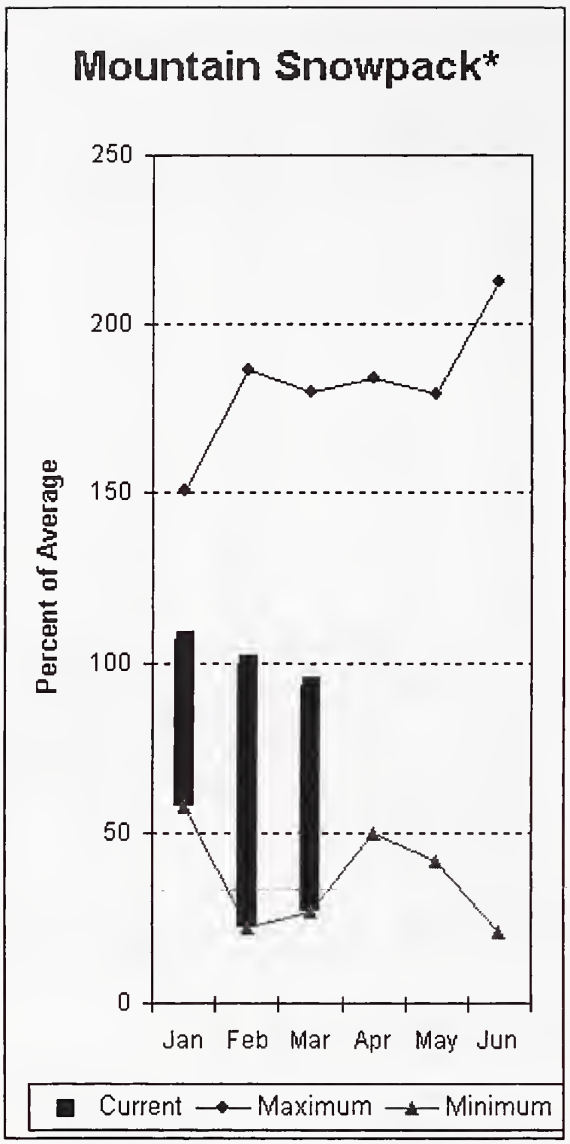
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

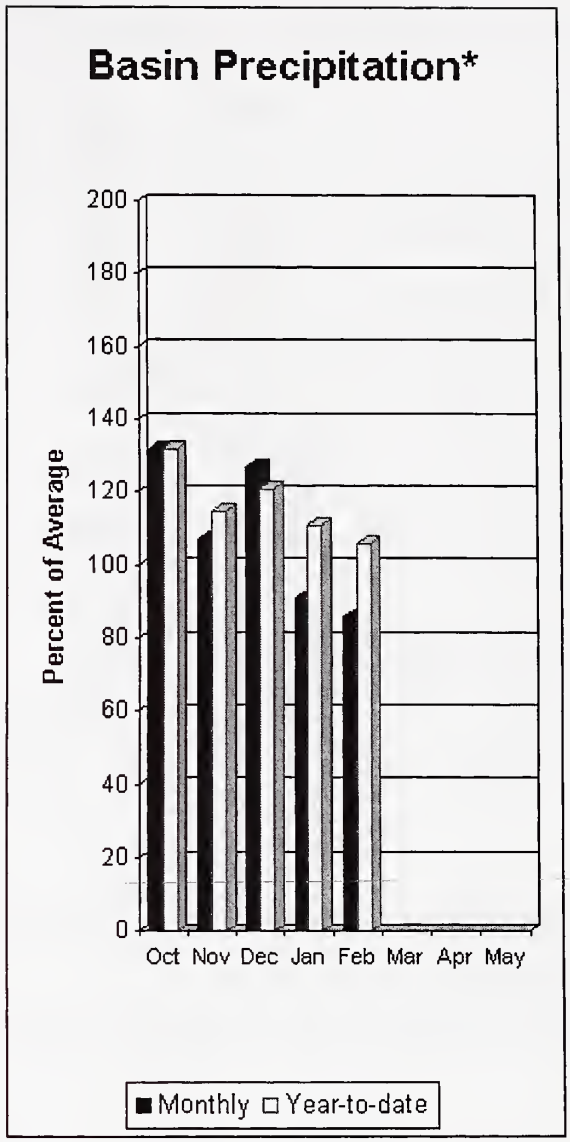
Colville-Pend Oreille River Basins
Percent of Average
March 1, 2002

Snowpack - 94%
Precipitation - 120%
Reservoir Capacity - 81%



Okanogan - Methow River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 95%, Similkameen River is 97%, Methow River is 102% and Salmon Creek is 95%. March 1 snow cover on the Okanogan was 106% of average and Methow was 100%. February precipitation in the Okanogan-Methow was 86% of average, with precipitation for the water year at 106% of average. February streamflow for the Methow River was 87% of average, 69% for the Okanogan River and 85% for the Similkameen. Snow-water content at Harts Pass SNOTEL was 38.9 inches. Average for this site is 39.7 inches on March 1. Combined storage in the Conconully Reservoirs was 6,700-acre feet, which is 29% of capacity and 39% of the March 1 average. Temperatures were 1 degree above normal for the past month and 2-3 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

OKANOGAN - METHOW RIVER BASINS
Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-JUL	966	1203	1310	97	1417	1654	1350
	APR-SEP	1015	1287	1400	97	1513	1813	1450
OKANOGAN near Tonasket (1)	APR-JUL	838	1294	1501	95	1708	2164	1580
	APR-SEP	1077	1453	1680	95	1907	2278	1766
SALMON CREEK near Conconully	APR-JUL	6.2	13.8	19.0	95	24	32	20
	APR-SEP	6.7	14.6	20	95	25	33	21
BEAVER CREEK below SF near Twisp	APR-SEP	7.9	10.8	12.7	105	14.6	17.5	12.1
	APR-JUL	7.0	9.8	11.7	105	13.6	16.4	11.1
METHOW RIVER near Pateros	APR-SEP	670	944	1000	102	1056	1320	985
	APR-JUL	811	887	938	103	989	1065	911

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE		NO REPORT		
CONCONULLY RESERVOIR		NO REPORT		

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	22	185	106
OMAK CREEK	3	235	108
SANPOIL RIVER	1	92	73
SIMILKAMEEN RIVER	4	124	88
TOATS COULEE CREEK	1	133	82
CONCONULLY LAKE	3	203	93
METHOW RIVER	5	220	100

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

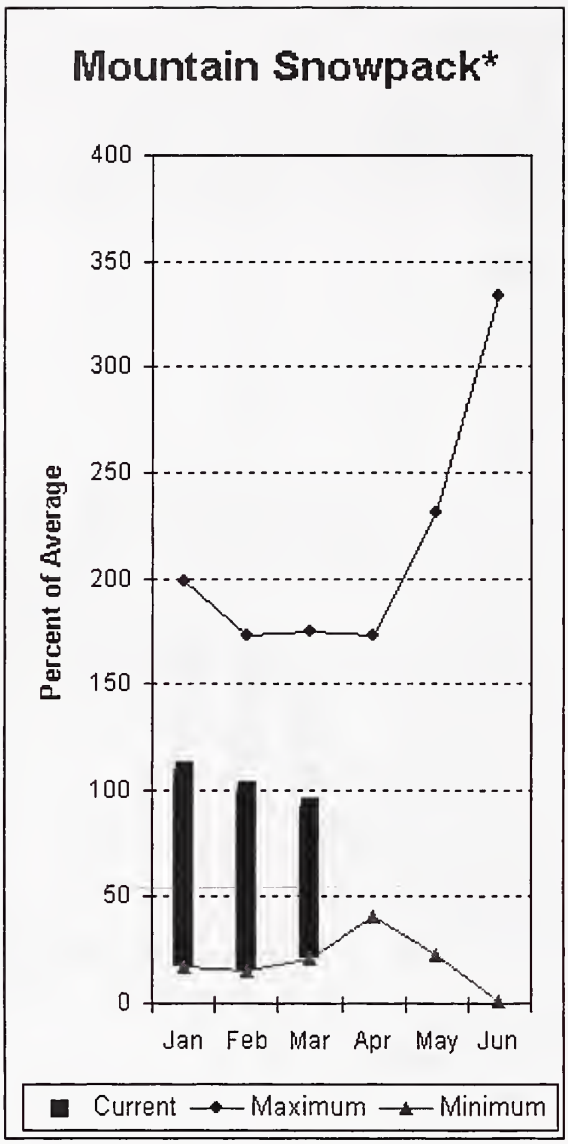
The average is computed for the 1971-2000 base period.

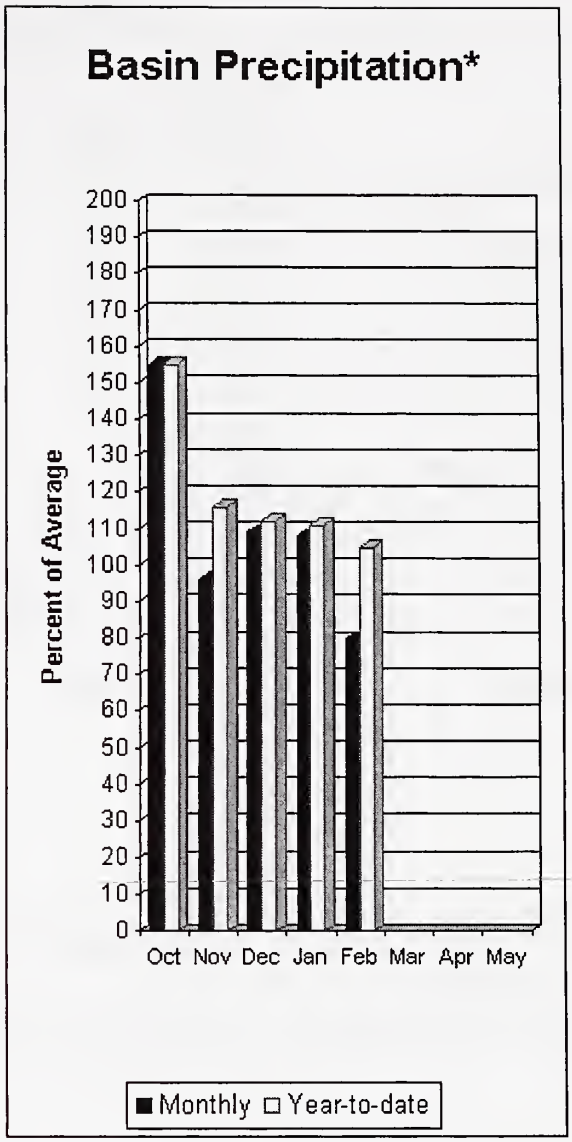
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Okanogan-Methow River Basins
Percent of Average
March 1, 2002

Snowpack - 93%
Precipitation - 106%
Reservoir Capacity - 39%

Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during February was 80% of average in the basin and 105% for the year-to-date. Runoff for Entiat River is forecast to be 95% of average for the summer. The March-September average forecast for Chelan River is 100%, Wenatchee River at Plain is 93% and Stehekin is 101%. Icicle, Stemilt and Squilchuck creeks are all expected to fall into the same forecast range. February average streamflows on the Chelan River were 101% and on the Wenatchee River 89%. March 1 snowpack in the Wenatchee River Basin was 97% of average; the Chelan, 116%; the Entiat, 77%; Stemilt Creek, 81% and Colockum Creek, 89%. Reservoir storage in Lake Chelan was 265,000-acre feet, 106% of March 1 average and 39% of capacity. Lyman Lake SNOTEL had the most snow water with 61.7 inches of water. This site would normally have 55.1 inches on March 1. Temperatures were 1 degrees above normal for February and 1-2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	1022	1119	1185	100	1251	1348	1185
	APR-JUL	909	991	1046	100	1101	1183	1046
STEHEKIN near STEHEKIN	APR-SEP	726	791	835	101	879	944	827
	APR-JUL	620	671	706	101	741	792	699
ENTIAT RIVER near Ardenvoir	APR-SEP	195	213	226	95	239	257	238
	APR-JUL	177	194	205	95	216	233	216
WENATCHEE at Plain	APR-SEP	959	1054	1119	93	1184	1279	1198
	APR-JUL	886	959	1008	94	1057	1130	1078
WENATCHEE R. at Peshastin	APR-SEP	981	1390	1560	95	1730	2109	1635
	APR-JUL	925	1212	1407	95	1602	1889	1481
STEMILT nr Wenatchee (miners in)	MAY-SEP	87	113	131	95	149	175	138
ICICLE CREEK near Leavenworth	APR-SEP	302	323	338	98	353	374	345
	APR-JUL	280	299	312	98	325	344	318
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	55632	63713	67400	97	71087	79276	69540
	APR-JUL	47506	53278	57200	97	61122	66894	59020

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	265.3	367.7	250.1

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	5	236	116
ENTIAT RIVER	2	148	77
WENATCHEE RIVER	12	169	97
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	2	118	81
COLOCKUM CREEK	1	138	89

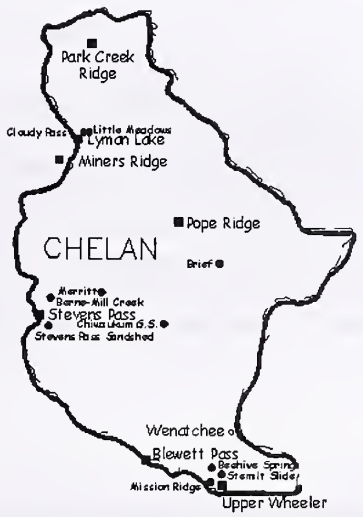
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

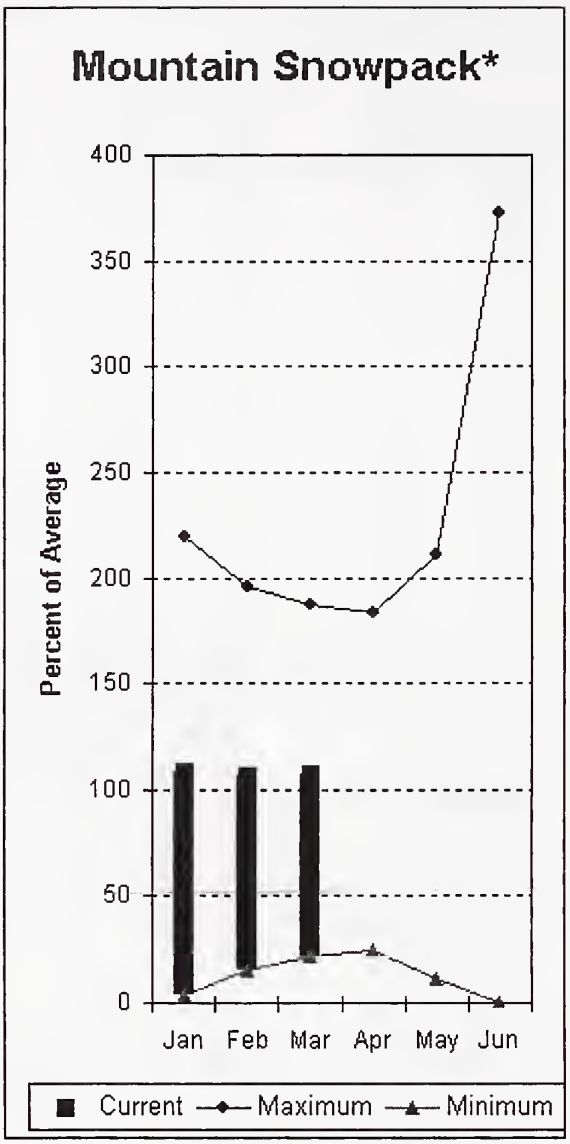
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

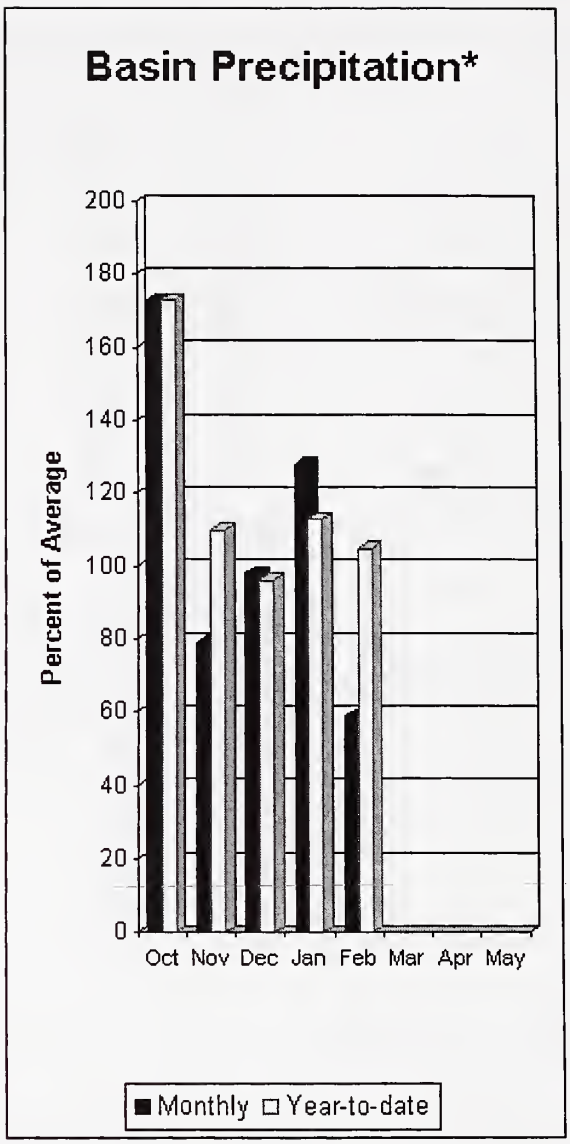
Wenatchee-Chelan River Basins
Percent of Average
March 1, 2002

Snowpack - 92%
Precipitation - 105%
Reservoir Capacity - 106%



Upper Yakima River Basin





*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 365,000-acre feet, 73% of average. Forecasts for the Yakima River at Cle Elum are 103% of average and the Teanaway River near Cle Elum is at 105%. Lake inflows are all forecasted to be near average this summer. February streamflows within the basin were Yakima near Cle Elum at 69% and Cle Elum River near Roslyn at 72%. March 1 snowpack was 107% based upon 10 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 59% of average for February and 105% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
KEECHELUS LAKE INFLOW	APR-JUL	111	123	131	108	139	151	121
	APR-SEP	119	133	143	108	153	167	133
KACHESS LAKE INFLOW	APR-JUL	94	105	113	102	121	132	111
	APR-SEP	102	114	122	102	130	142	120
CLE ELUM LAKE INFLOW	APR-JUL	382	406	422	103	438	462	408
	APR-SEP	409	439	460	103	481	511	448
YAKIMA at Cle Elum	APR-JUL	763	817	854	104	891	945	822
	APR-SEP	827	888	930	103	972	1033	903
TEANAWAY near Cle Elum	APR-JUL	134	143	150	105	157	166	143
	APR-SEP	137	146	153	105	160	169	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	87.7	23.5	102.4
KACHESS	239.0	100.3	120.5	154.7
CLE ELUM	436.9	177.4	87.0	241.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	10	182	107

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

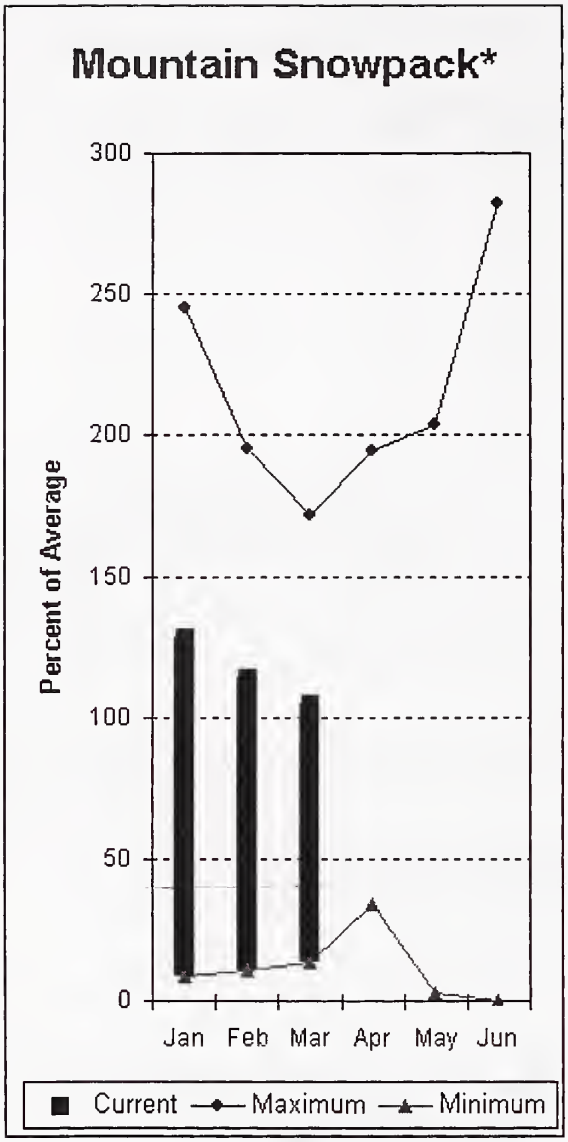
The average is computed for the 1971-2000 base period.

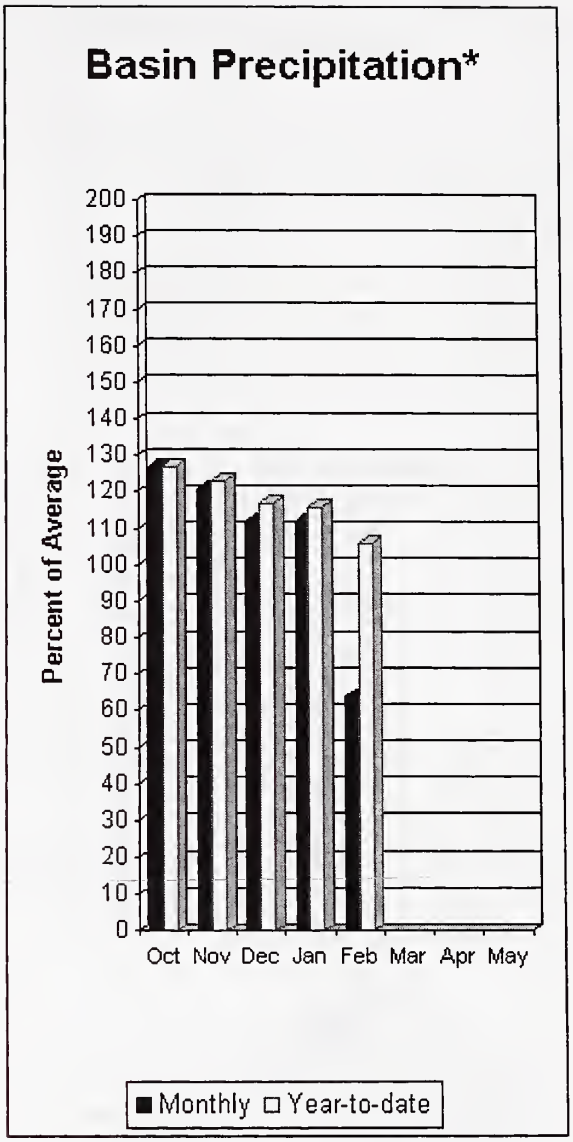
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Upper Yakima River Basin
Percent of Average
March 1, 2002

Snowpack - 107%
Precipitation - 105%
Reservoir Capacity - 73%

Lower Yakima River Basin





*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 64%; Naches River near Naches, 66% and Yakima River at Kiona, 50%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 116,000-acre feet, 84% of average. Forecast averages for Yakima River near Parker are 106%; American River near Nile, 100%; Ahtanum Creek, 100% and Klickitat River near Glenwood, 113%. March 1 snowpack was 105% based upon 8 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 64% of average for February and 106% year-to-date for water. Temperatures were 1 degree above normal for the month and 1-2 degrees above average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
BUMPING LAKE INFLOW	APR-SEP	118	132	141	105	150	164	134
	APR-JUL	108	121	129	106	137	150	122
AMERICAN RIVER near Nile	APR-SEP	102	112	118	100	124	134	118
	APR-JUL	94	103	109	101	115	124	108
RIMROCK LAKE INFLOW	APR-SEP	209	230	245	101	260	281	242
	APR-JUL	178	194	205	101	216	232	204
NACHES near Naches	APR-SEP	699	771	820	98	869	941	837
	APR-JUL	635	699	743	98	787	851	758
AHTANUM CREEK nr Tampico (2)	APR-SEP	28	39	46	100	53	64	46
	APR-JUL	26	35	42	100	49	58	42
YAKIMA near Parker	APR-SEP	1774	1933	2040	106	2148	2306	1918
	APR-JUL	1609	1747	1840	106	1933	2071	1731
KLICKITAT near Glenwood	APR-JUN	125	138	146	113	154	167	129
	APR-SEP	155	172	184	113	196	213	163

LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	17.1	3.0	11.5
RIMROCK	198.0	99.1	103.6	126.1

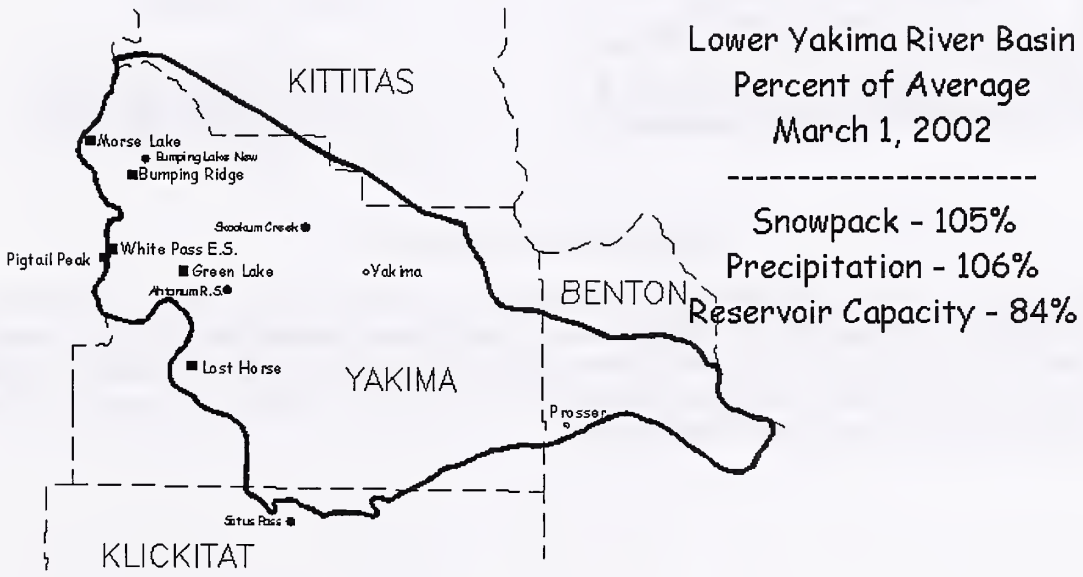
LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average

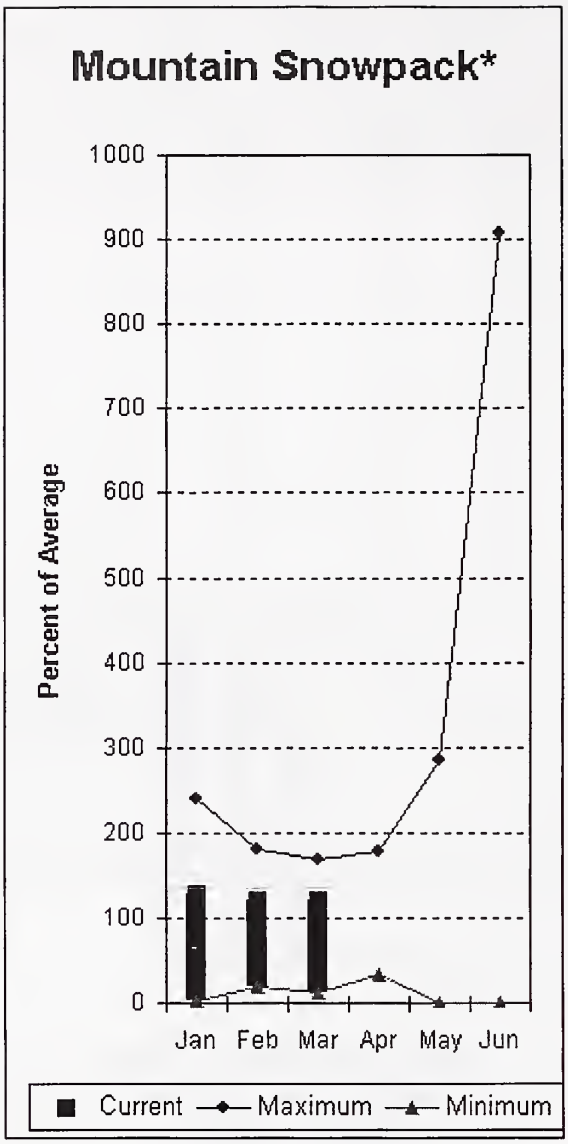
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

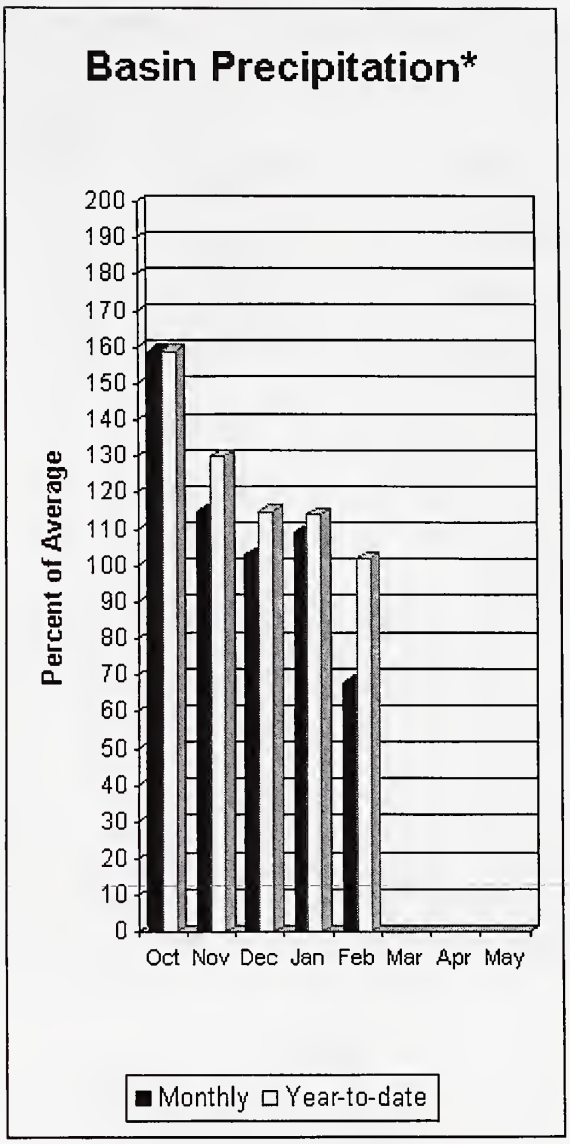
The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.



Walla Walla River Basin





*Based on selected stations

February precipitation was 68% of average, maintaining the year-to-date precipitation at 102% of average. Snowpack in the basin was 120% of average. Streamflow forecasts are 112% of average for Mill Creek and 100% for the SF Walla Walla near Milton-Freewater. February streamflow was 107% of average for the Walla Walla River. Average temperatures were near normal for February and have averaged 1 degree above throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MILL CREEK at Walla Walla	APR-SEP	13.2	17.6	21	112	24	28	18.4
	APR-JUL	13.0	17.4	20	112	23	28	18.2
SF WALLA WALLA near Milton-Freewater	APR-JUL	43	49	53	100	57	63	53
	APR-SEP	55	61	66	100	71	77	66

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	187	120

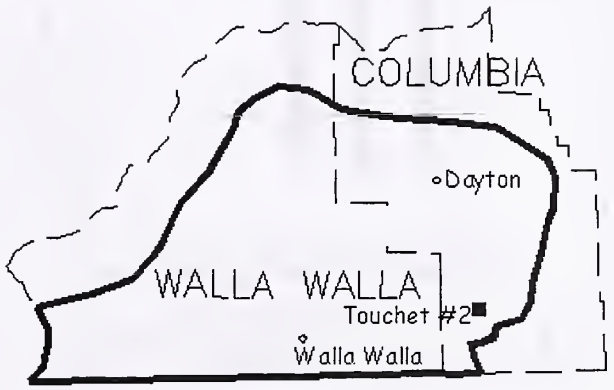
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

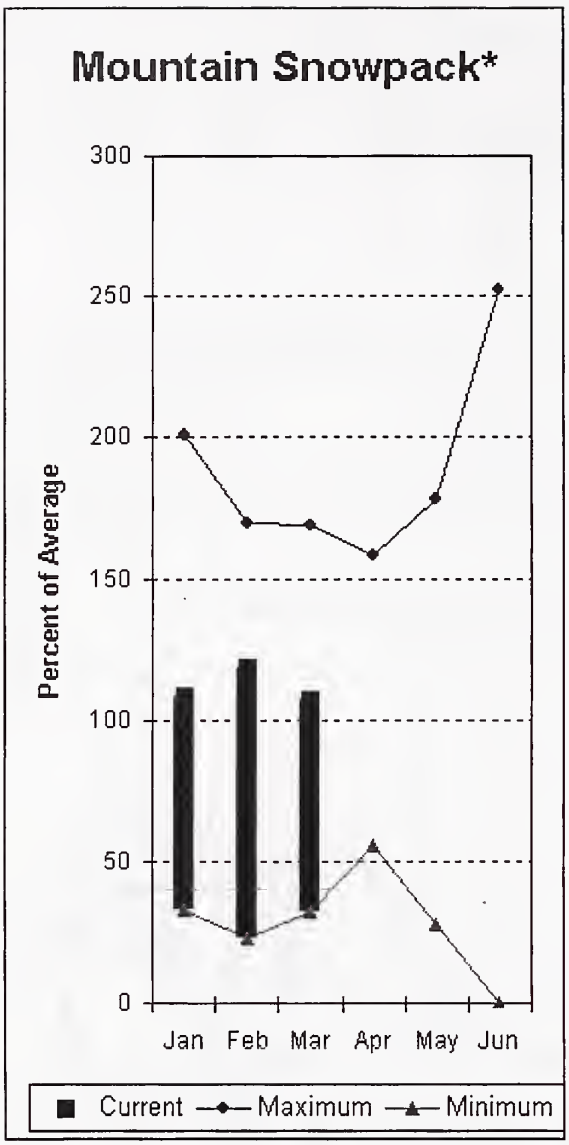
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

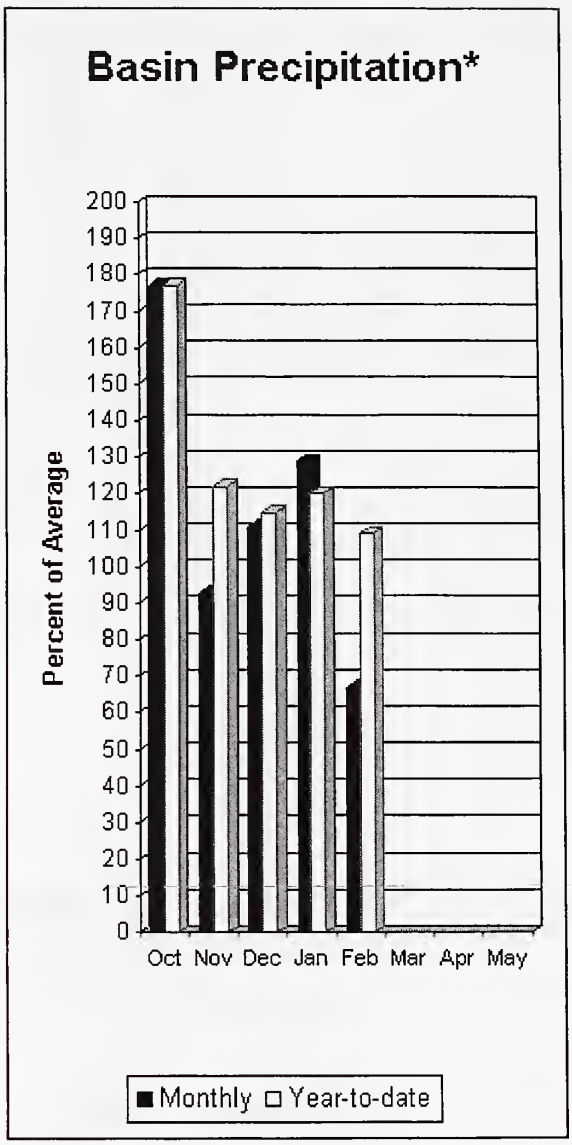
Walla Walla River Basin
Percent of Average
March 1, 2002

Snowpack - 120%
Precipitation - 102%



Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 110% for Clearwater River at Spalding. The Grande Ronde River can expect summer flows to be about 101% of normal. February precipitation was 67% of average, bringing the year-to-date precipitation to 109% of average. March 1 snowpack readings averaged 107% of normal. February streamflow was 52% of average for Snake River below Lower Granite Dam and 43% for Grande Ronde River near Troy. Average temperatures were near normal for February and 1 degree above for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	MAR-JUL	1168	1168	1580	100	1717	2225	1578
	APR-SEP	991	1265	1390	101	1515	1789	1372
CLEARWATER at Spalding (1,2)	APR-JUL	5799	7665	8180	110	8695	10632	7435
	APR-SEP	6890	8080	8620	110	9160	10350	7850
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	12430	17429	19700	91	21971	26970	21550
	APR-SEP	13731	19349	21900	91	24451	30069	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER SNAKE, GRANDE RONDE	17	180	107

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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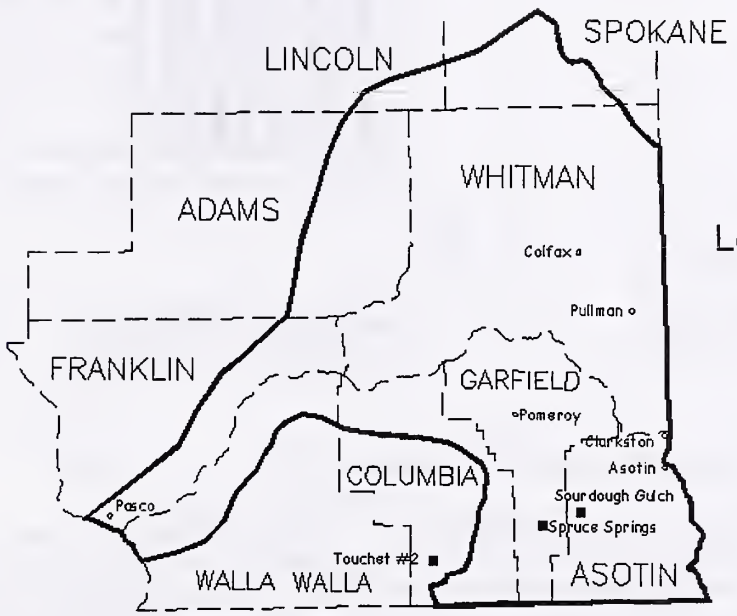
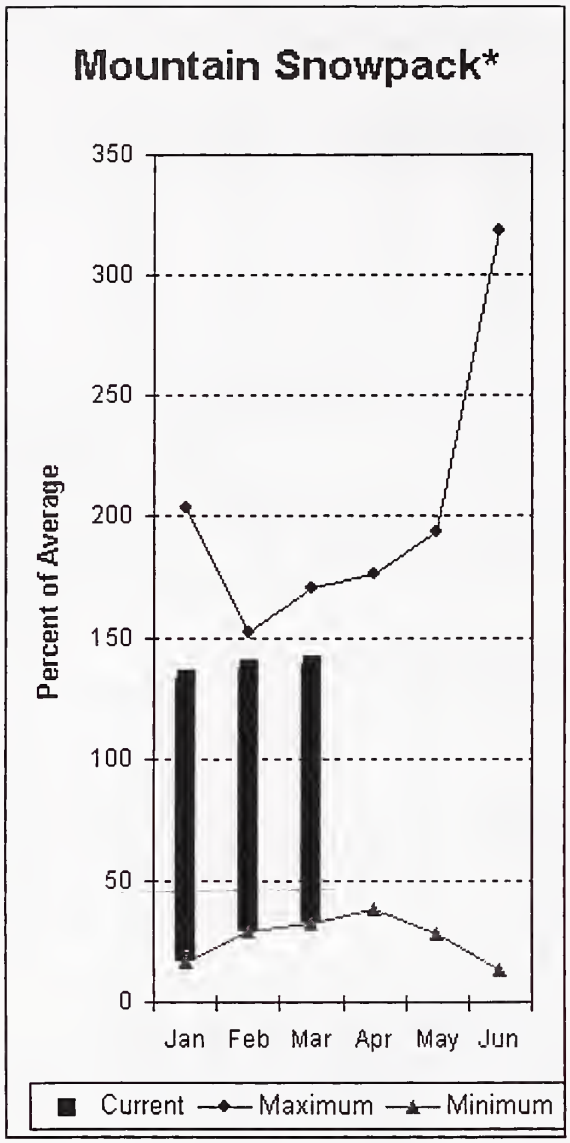
(2) - The value is natural flow - actual flow may be affected by upstream water management.

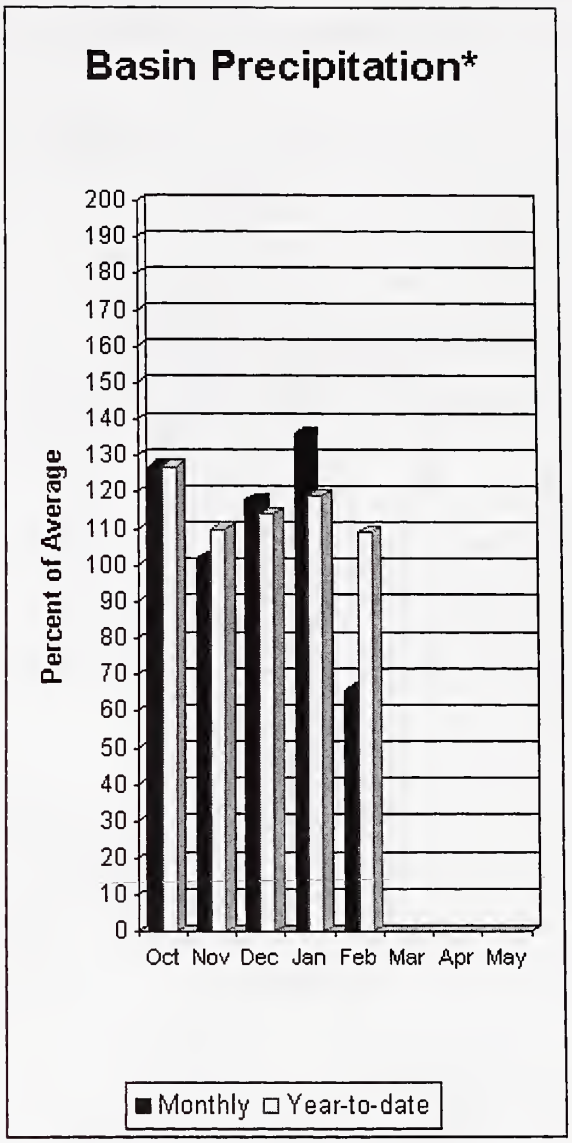


Lower Snake River Basin
Percent of Average
March 1, 2002

Snowpack - 107%
Precipitation - 109%

Cowlitz - Lewis River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 111% and Cowlitz River at Castle Rock, 99% of average. The Columbia at The Dalles is forecasted to have 93% of average flows this summer. February average streamflow for Cowlitz River was 77% and 82% for Lewis River. The Columbia River at the Dalles was also down at 69% of average. February precipitation was 66% of average and the water-year average was 109%. March 1 snow cover for Cowlitz River was 112% and Lewis River was 166% of average. Surprise Lakes SNOTEL reported the most water content for the basin with 78.1 inches. Average March 1 water content is 40.1 inches. Average temperatures were 1 degree above normal during February and have averaged 1 degree above throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-JUL	866	1035	1150	112	1265	1434	1031
	APR-SEP	776	1182	1300	111	1418	1811	1176
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	1040	1612	2000	104	2388	2960	1922
	APR-JUL	804	1373	1760	104	2147	2716	1692
COWLITZ R. at Castle Rock (2)	APR-SEP	1272	2075	2620	99	3165	3968	2639
	APR-JUL	1466	1951	2280	100	2609	3094	2279
KLICKITAT near Glenwood	APR-JUN	125	138	146	113	154	167	129
	APR-SEP	155	172	184	113	196	213	163
COLUMBIA R. at The Dalles (2)	APR-SEP	73988	85913	91400	93	96887	108515	98650
	APR-JUL	63041	72305	78600	93	84895	94159	84650

COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	249	166
COWLITZ RIVER	6	226	112

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

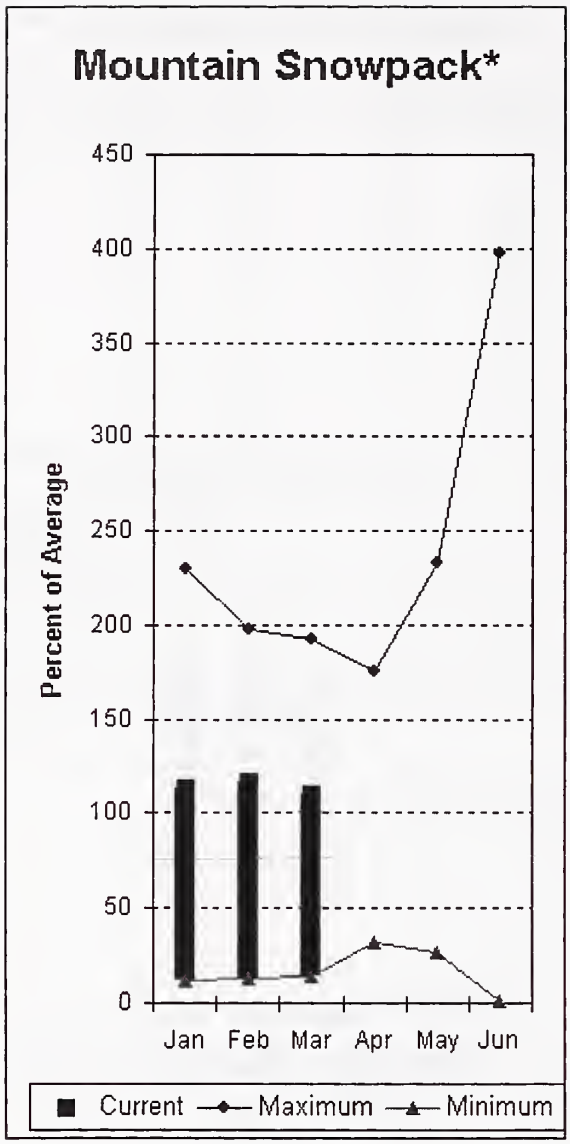
The average is computed for the 1971-2000 base period.

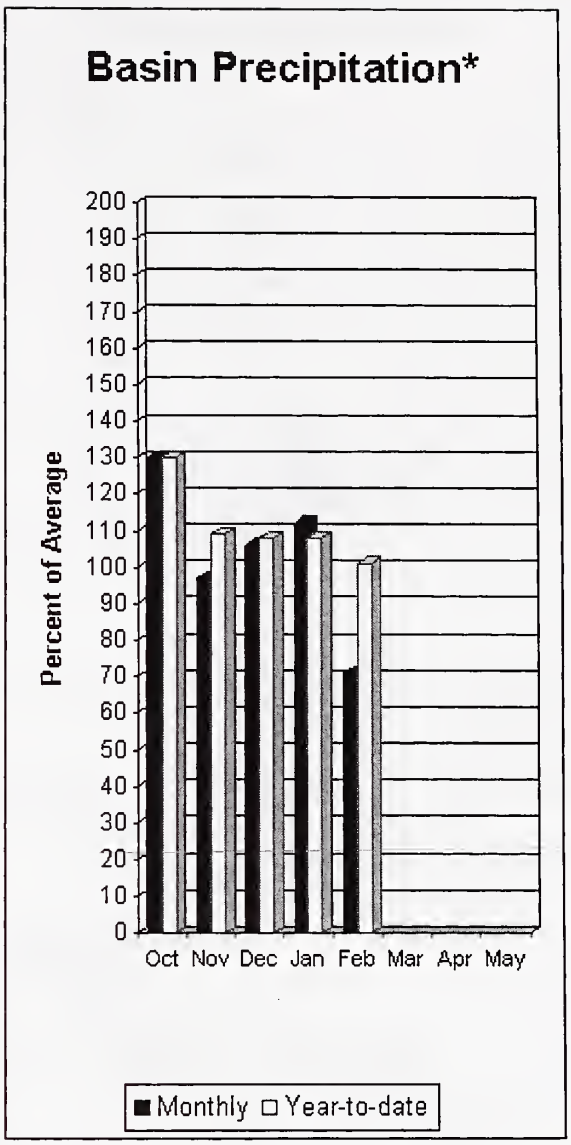
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Cowlitz-Lewis River Basins
Percent of Average
March 1, 2002

Snowpack - 139%
Precipitation - 109%

White - Green River Basins





*Based on selected stations

Summer runoff is forecast to be 106% of normal for the Green River below Howard Hanson Dam and 107% for the White River near Buckley. March 1 snowpack was 106% of average in both White River and Puyallup river basins and 118% in Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 33.6 inches. This site has a March 1 average of 29.5 inches. February precipitation was 71% of average, bringing the water year-to-date to 101% of average for the basins. Average temperatures in the area were slightly above normal last month and remain near average for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WHITE near Buckley (1,2)	APR-JUL	384	447	476	108	505	568	440
	APR-SEP	460	536	570	107	604	680	534
GREEN below Howard Hanson (1,2)	APR-JUL	186	237	260	107	283	334	243
	APR-SEP	206	260	285	106	310	364	268

WHITE - GREEN - PUYALLUP RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WHITE - GREEN - PUYALLUP RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	201	106
GREEN RIVER	7	207	118
PUYALLUP RIVER	3	205	106

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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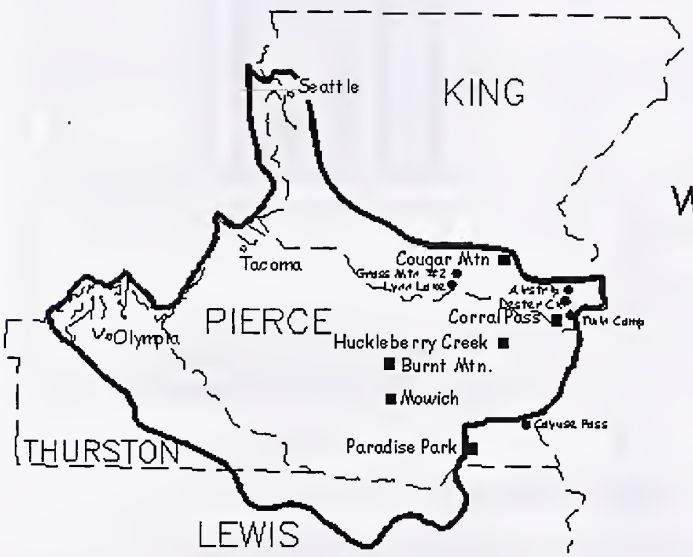
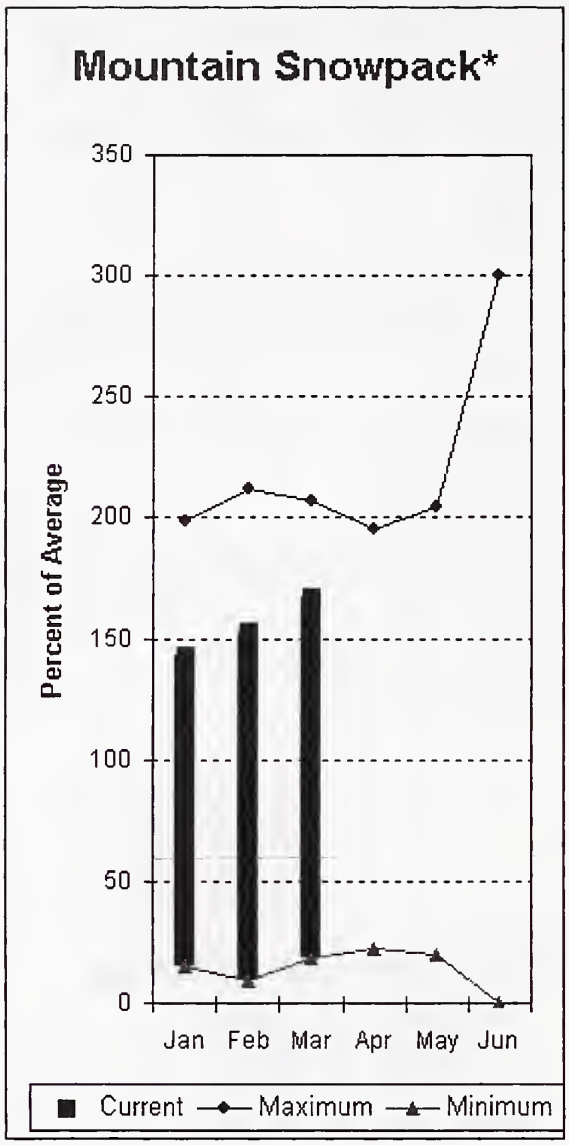
(2) - The value is natural flow - actual flow may be affected by upstream water management.

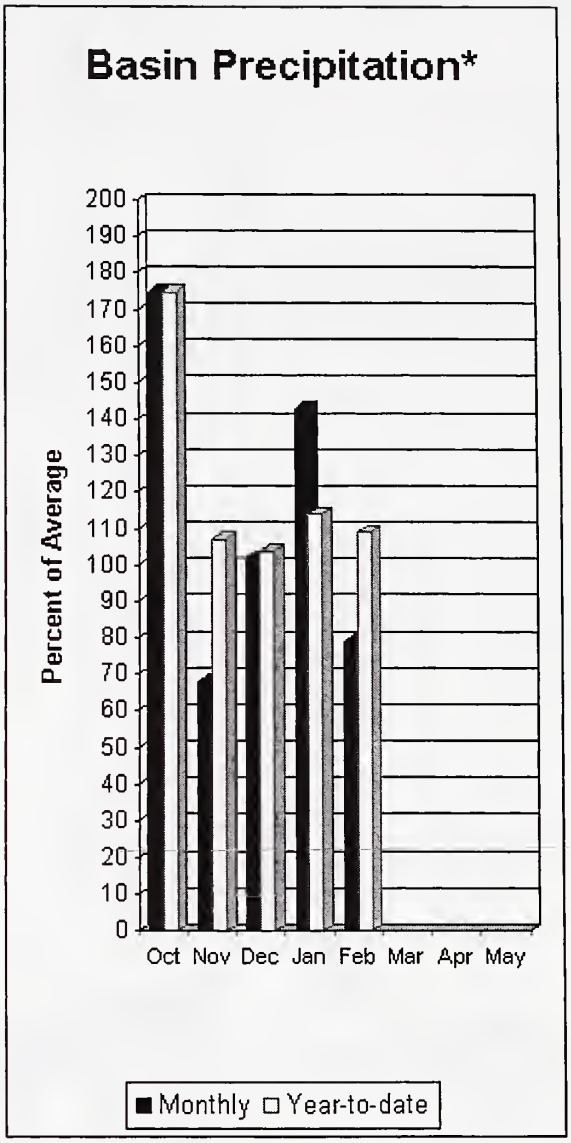


White-Green-Puyallup Basins
Percent of Average
March 1, 2002

Snowpack - 110%
Precipitation - 101%

Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 111% for Cedar River near Cedar Falls; 114% for Rex River; 115% for South Fork of the Tolt River and 141% for Cedar River at Cedar Falls. Basin-wide precipitation for February was 79% of average, bringing water-year-to-date to 109% of average. March 1 average snow cover in Cedar River Basin was 148%, Tolt River Basin was 213%, Snoqualmie River Basin was 154% and Skykomish River Basin was 154%. Olallie Meadows SNOTEL site at 3960 feet, had 48.9 inches of water content. Average March 1 water content is 48.9 inches at Olallie Meadows. February temperatures were slightly above average for the past month but near normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR near Cedar Falls	APR-JUL	64	75	82	112	89	100	73
	APR-SEP	70	81	89	111	97	108	80
REX near Cedar Falls	APR-JUL	21	26	29	116	32	37	25
	APR-SEP	23	28	32	114	36	41	28
CEDAR RIVER at Cedar Falls	APR-JUL	81	94	103	139	112	125	74
	APR-SEP	81	94	103	141	112	125	73
SOUTH FORK TOLT near Index	APR-JUL	14.4	16.0	17.0	116	18.0	19.6	14.7
	APR-SEP	16.2	18.2	19.5	115	21	23	16.9

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	206	148
TOLT RIVER	3	312	213
SNOQUALMIE RIVER	6	251	154
SKYKOMISH RIVER	4	261	154

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

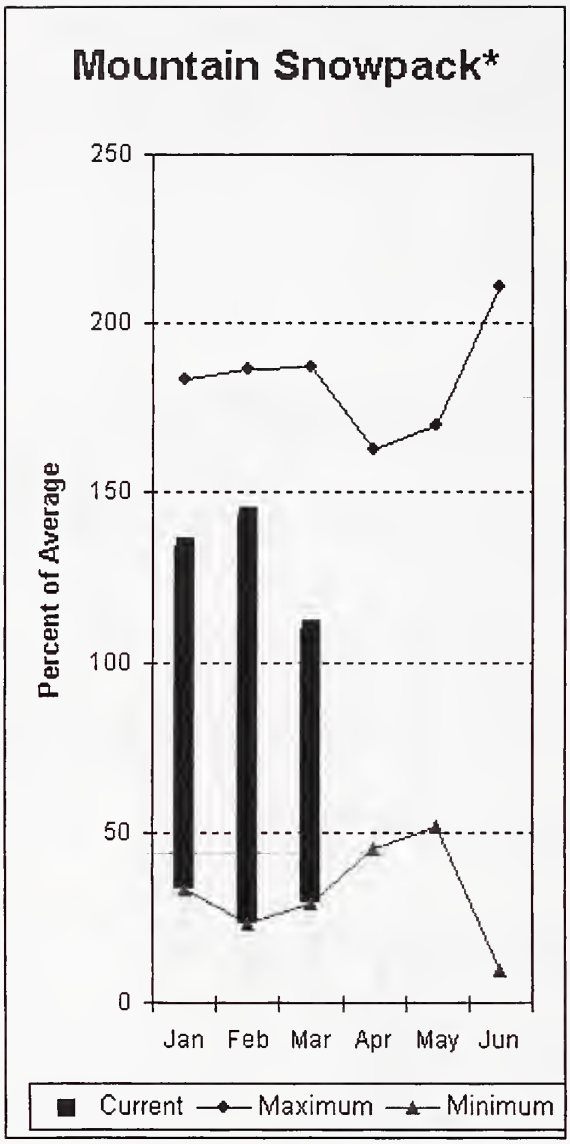
The average is computed for the 1971-2000 base period.

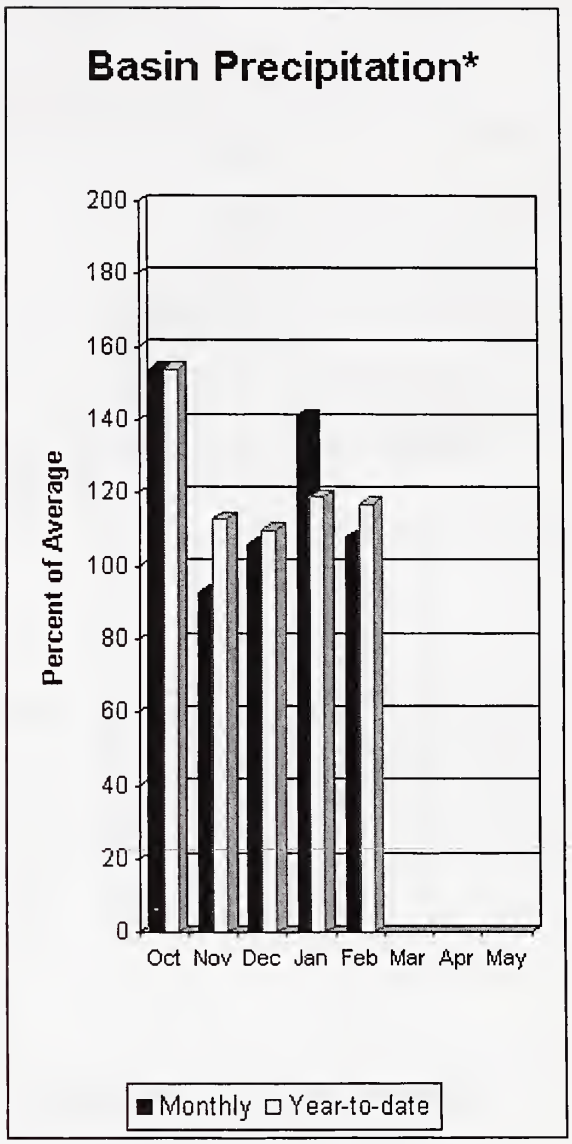
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Central Puget Sound Basins
Percent of Average
March 1, 2002

Snowpack - 167%
Precipitation - 109%

North Puget Sound River Basins





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 106% of average for the spring and summer period. February streamflow in Skagit River was 112% of average. Other forecast points included Baker River at 104% and Thunder Creek at 104% of average. Basin-wide precipitation for February was 108% of average, bringing water-year-to-date to 117% of average. March 1 average snow cover in Skagit River Basin was 115%, Baker River Basin was 98% and Nooksack River Basin was 118%. Rainy Pass SNOTEL, at 4,780 feet, had 41.4 inches of water content. Average March 1 water content is 38.2 inches at Rainy Pass. March 1 Skagit River reservoir storage was 103% of average and 62% of capacity. Average February temperatures were near normal for the basin and near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>>						
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	222	237	248	106	259	274	234
	APR-SEP	315	333	345	104	357	375	333
SKAGIT at Newhalem (2)	APR-JUL	1810	1938	2025	109	2112	2240	1864
	APR-SEP	2104	2245	2340	106	2435	2576	2217
BAKER RIVER near Concrete	APR-JUL	755	829	880	106	931	1005	828
	APR-SEP	948	1035	1095	104	1155	1242	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	843.1	789.7	818.3
DIABLO RESERVOIR	90.6	87.6	88.2	85.7
GORGE RESERVOIR	9.8	7.9	8.0	7.9

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	13	236	115
BAKER RIVER	4	219	98
NOOKSACK RIVER	1	208	118

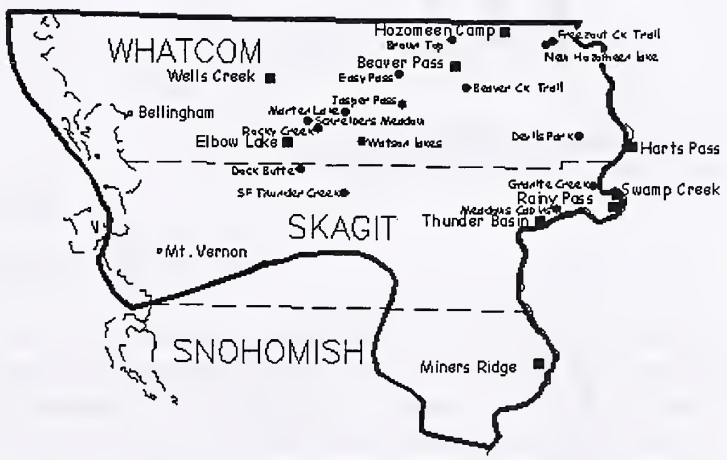
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

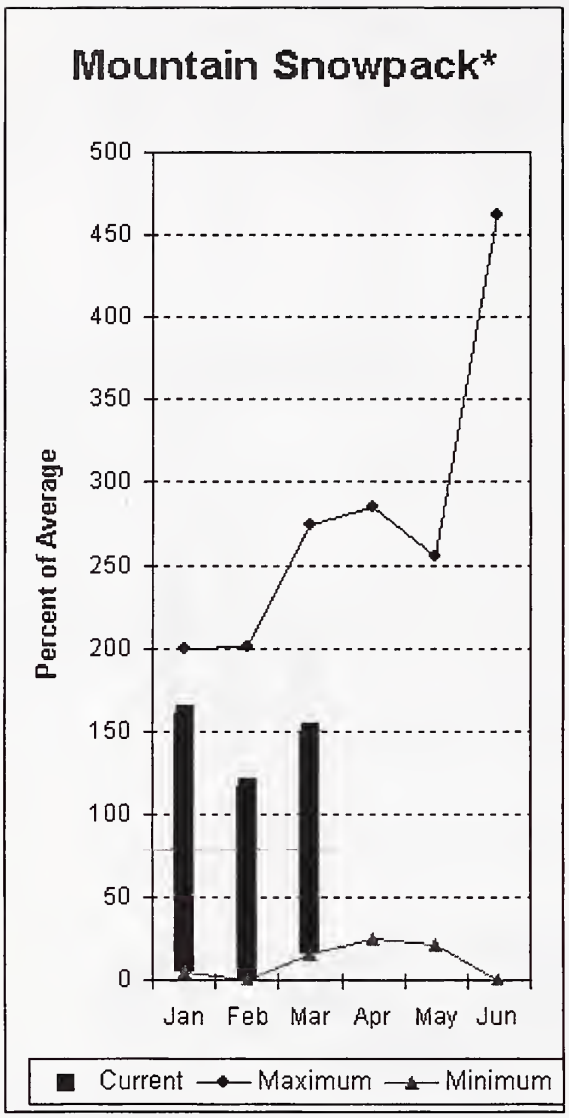
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

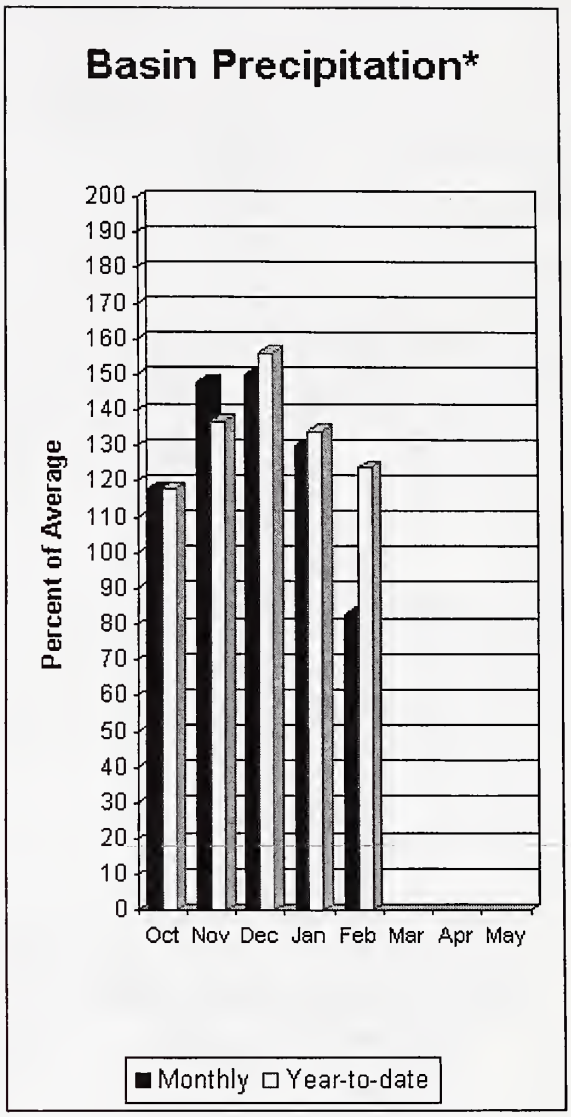
North Puget Sound Basins
Percent of Average
March 1, 2002

Snowpack - 110%
Precipitation - 117%
Reservoir Capacity - 103%



Olympic Peninsula River Basins





*Based on selected stations

Forecasted average runoff for streamflow in both the Dungeness River and Elwha River basins is 105%. Big Quilcene and Wynoochee rivers should expect near average runoff this summer also. February precipitation was 83% of average. Precipitation has accumulated at 124% of average for the water year. February precipitation at Quillayute WSO was 13.11 inches. The thirty-year average for February is 12.35 inches. Olympic Peninsula snowpack averaged 150% of normal on March 1. Temperatures were slightly below average for the month and near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2002

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	143	153	160	105	167	177	152
	APR-JUL	118	126	131	106	136	144	124
ELWHA near Port Angeles	APR-SEP	457	499	528	105	557	599	503
	APR-JUL	386	418	440	105	462	494	419

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2002

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	4	269	150
ELWHA RIVER	1	343	112
MORSE CREEK	1	217	110
DUNGENESS RIVER	1	184	118
QUILCENE RIVER	1	362	238
WYNOOCHEE RIVER	0	0	0

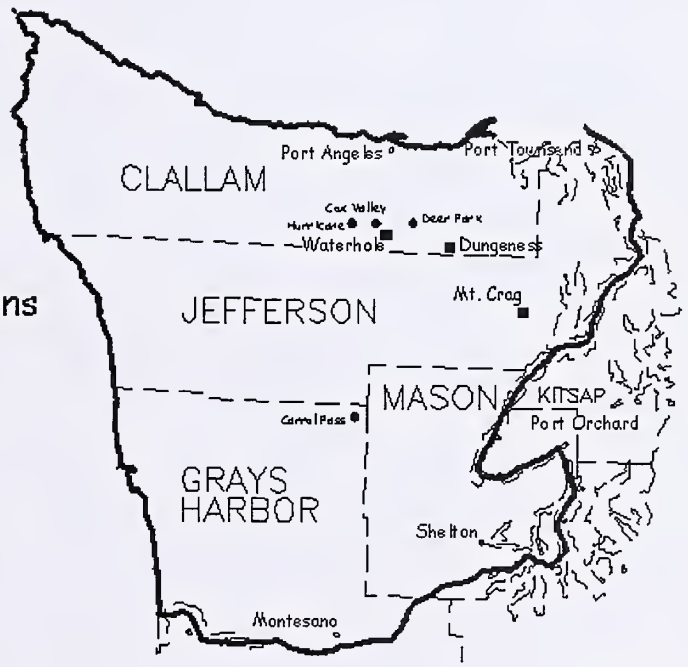
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Olympic Peninsula River Basins
Percent of Average
March 1, 2002

Snowpack - 150%
Precipitation - 124%



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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada
Ministry of Sustainable Resources
Snow Survey, River Forecast Centre, Victoria, British Columbia

State
Washington State Department of Ecology
Washington State Department of Natural Resources

Federal
Department of the Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service
U.S. Department of Commerce
NOAA, National Weather Service
U.S. Department of Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service
Bureau of Indian Affairs

Local
City of Tacoma
City of Seattle
Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company
Snohomish County P.U.D.
Colville Confederated Tribes
Spokane County
Yakama Indian Nation
Whatcom County
Pierce County

Private
Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association
Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA